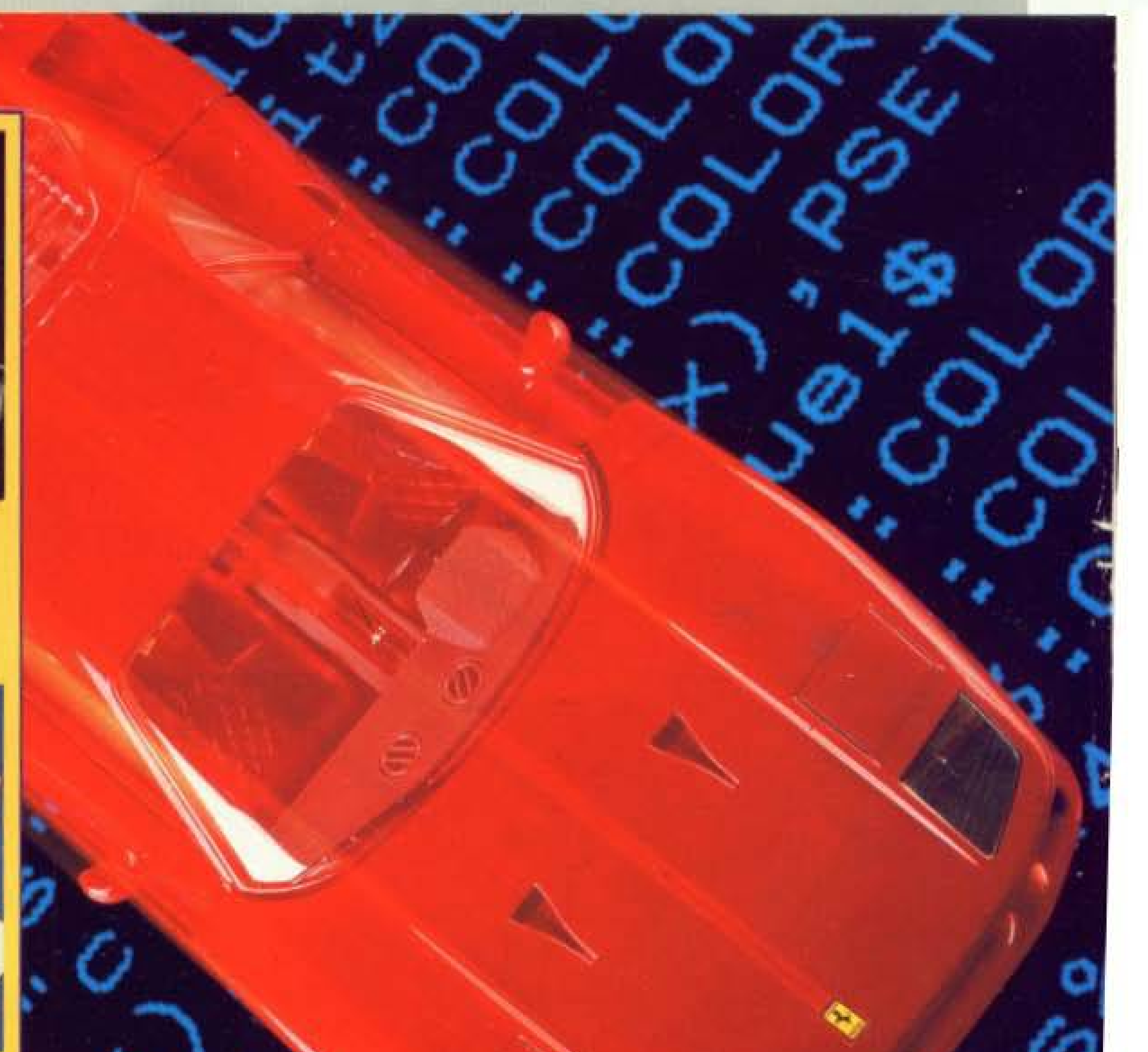
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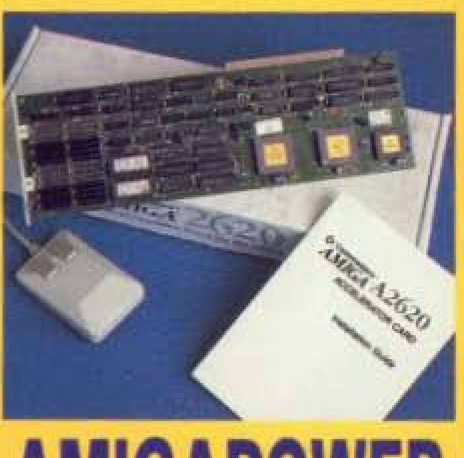
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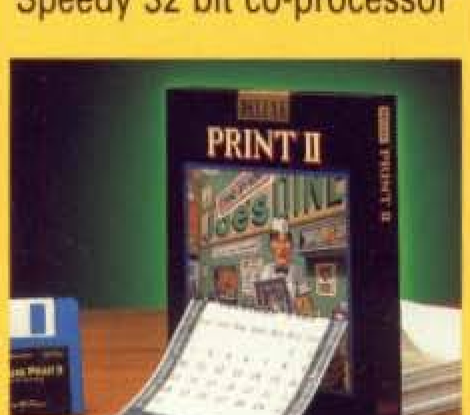
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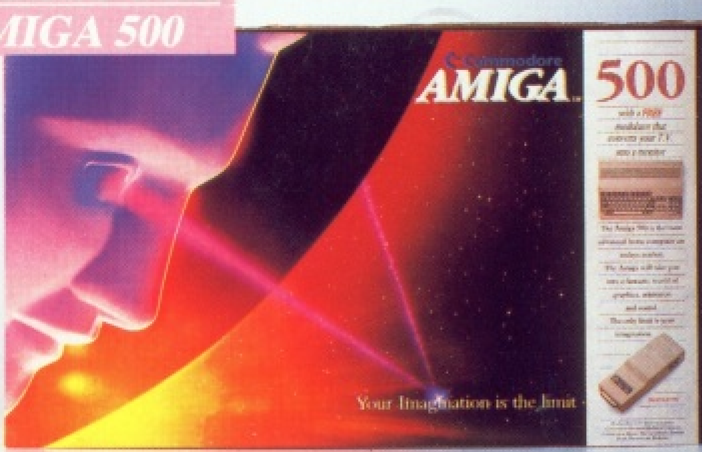
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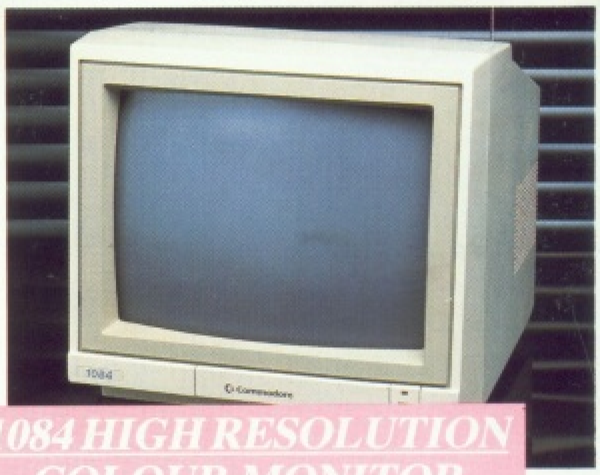
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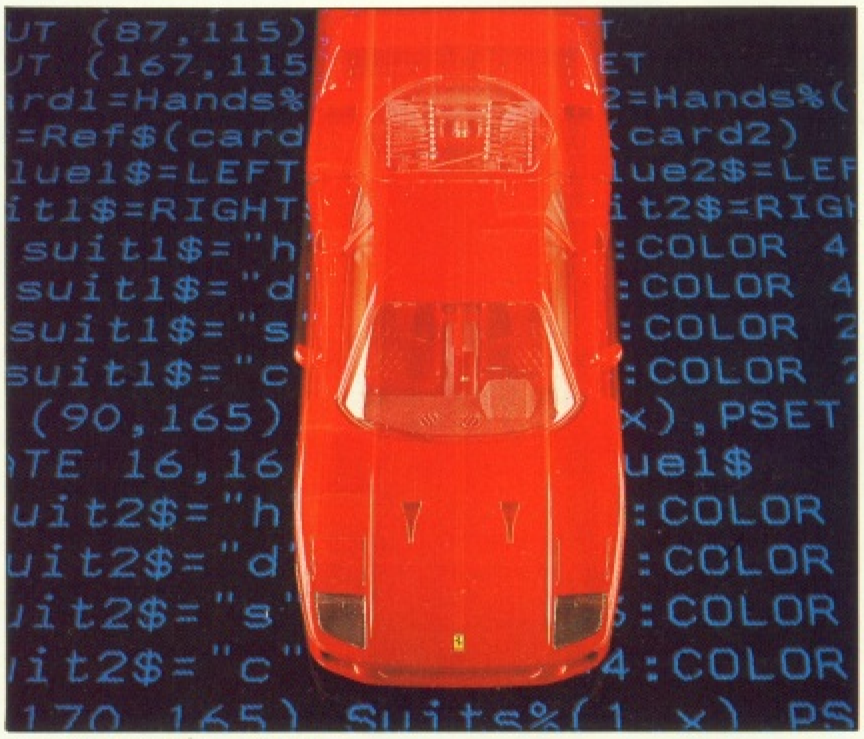
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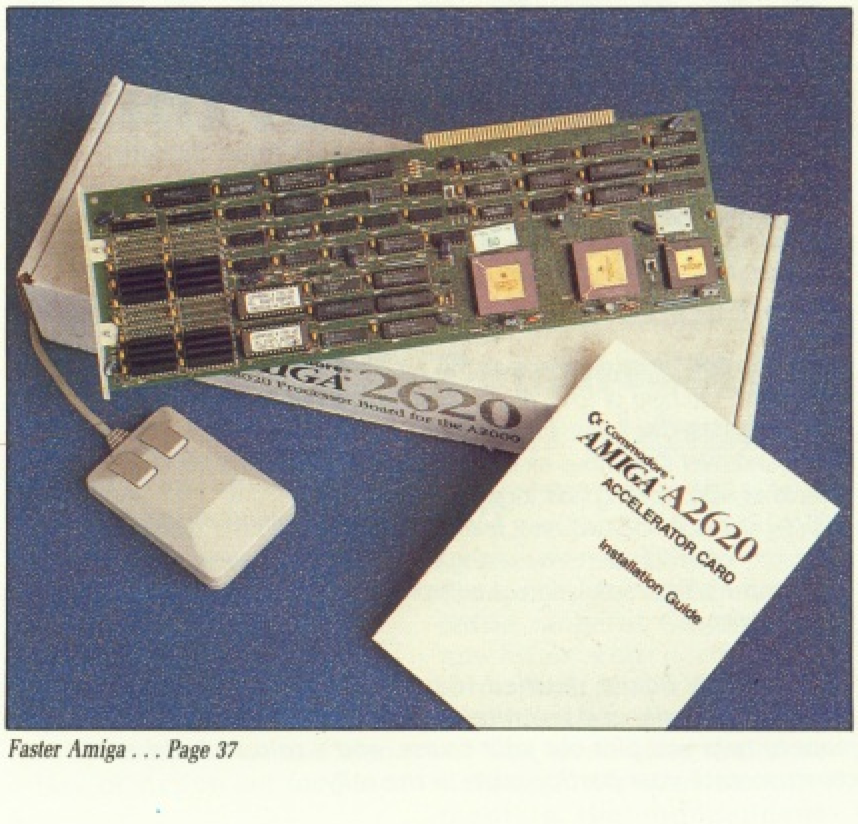




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Dragons Lair . . . Page 58



Faster Amiga . . . Page 37

AMIGA SCENE

Super monitor ready to ship

APPLIED Technology Marketing has been appointed UK distributor for Moniterm's Viking A2000 monitor. Based on the same chips Commodore uses in the, as yet unavailable, A2024 monitor, the Viking A2000 can display a screen 1,008 by 1,008 pixels in four shades of grey.

The non-interlaced flicker-free screen measures 20in diagonally, making it ideal for desktop publishing.

Moniterm is a major manufacturer of large screens for the Macintosh market and has worked closely with Commodore to help establish the A2000 as a serious rival to the Apple range.

Programs which follow Commodore guidelines, such as WordPerfect, should work on the big screen monitor without modification, although those which open a custom screen may need minor changes.

The Viking plugs into a slot on an Amiga 2000 using a card with 2Mb of dual ported video ram. This memory is not shared with the system, so you can still have a full 9Mb in your Amiga. However most applications will run out of chip ram if you open a 1,008 by 1,008 window.

To counter this the Viking A2000 will be supplied with the enhanced chip set (ECS) when it becomes available. This may lead to some delays, since ECS needs Workbench 1.4. In the meantime Viking 1s will be sold with a Jumpstart utility which sets the system up for a big screen.

No UK price has been fixed, the US price of $1,995 compares very well with that of similar monitors on IBM and Macs. For more details contact Applied Technology Marketing, 2Q The Cad Cam Centre, 16 Highforce Road, Middlesbrough, Cleveland, TS2 1RJ. Or call 0642 225854.



Programmers warned

COMMODORE has warned its third party Amiga software developers to follow strict programming guidelines or face the consequences *(see Sprechen sie Amiga? Page 26)*.

Commodore's technical support manager, Dr Rahman Haleem, said: "The warning is intended to draw the attention of developers to some programming practices which have been resulting in certain commercial Amiga programs – mainly games – not running on some versions of our current operating systems.

"The introduction of Kickstart 1.3 should not affect the operation of properly written software, yet we are receiving reports of some games not running".

Dr Haleem has set up a test station in Maidenhead to help developers. It comprises a number of Amigas specially selected to run hardware and software under different conditions.

Here there be dragons

LATEST release for the Amiga from Software Horizons (01-348 4577) is Dragonscape, due out this month.

Transported back in time and space to an unknown era, you have to stop the evil curse that has descended on the land of Tuvania.

A dragon called Garvan helps you through the scrolling shoot-'em-up, collecting eight key artifacts as you go. Price £19.95.

Aid for autistic

LEISURE software houses hope to boost funds of the National Autistic Society by £50,000 this year. Games publishers attending the Industry Dinner in London kicked off the campaign by pledging £15,000 on the night. There are plans for a charity compilation and also a Day of Action set for May 4.

Over the past few years the UK games publishers have raised £500,000 for various charities.

Race for the million

THE Amiga now has a worldwide user base rapidly approaching the magic million mark. And Commodore plans to ensure that an ongoing supply of new hardware and software is developed to service this vast army of users.

The company is planning more developers' conferences where the latest initiatives can be discussed.

The second such conference to be held in Europe was at Frankfurt in January. Dates of others, including at least one in the UK, will be announced soon.

Psygnosis on the ball

PSYGNOSIS (051-236 8818), which has just signed a multi million dollar deal to market its products in the US, plans to release 17 games this year.

First off the production line for Amiga users is Ballistix, a fast competitive and tough ball game played on more than 130 different pitches.

Everything including ball speed, control, pitch design and number of players can be selected from the opening screen to give you the choice of pace and difficulty. Price £19.95.

Commodore deal signed

MICRODEALER International, the largest software distributor in Europe, is to distribute the entire range of Commodore machines and peripherals throughout the UK under a deal just signed.

"The deal both reaffirms Commodore's total commitment to the independent dealer and ensures Microdealer's future success in the hardware marketplace", said a spokesman.



Walk on the weird side

RAINBIRD has collaborated with the Motormouth television programme to pull of a Saturday morning coup, turning the forthcoming game Weird Dreams into a telephone general knowledge quiz.

Viewers who send in a photo and their telephone number are entered in a lottery to play Weird Dreams. The winner has to answer really difficult questions, like "Who is the Prime Minister?", to avoid the evil which lurks in the game.

For completing each stage the caller wins a pretty decent prize, a Motormouth T shirt and goodie bag, some item of trendy clothing and a Walkman. For completing the game, and swatting a giant wasp, the caller gets roped into a final and a chance to win a trip to Egypt on Concorde.

The TV version required a lot of work by the programmer, James Hutchby, graphic artist Herman Serrano and project manager Gary Sheinwald.

Herman drew a beautiful Concorde sprite in one day. Unfortunately this work has meant the game will be a little delayed – expect to see it this spring.

When it arrives you will want to be kitted out for the event, and Clare Edgely from Rainbird is offering five *Amiga Computing* readers just the right garb – five Motormouth Weird Dreams T shirts are up for grabs.

All you have to do is send us a postcard or letter telling us the name of the Motormouth presenter shown playing ball with the girl – some call her Denise – in the screen shot above.

Get your entry to us at Amiga Computing, First Floor, North House, 78-84 Ongar Road, Brentwood, Essex, CM15 9BG before April 1 and we'll put your name in the hat.

Northern drive

NEW boss of Commodore International's legal Scandinavian division is Erik Schale, former sales vice president in Sweden for Apple Computer.

A company spokesman said: "The appointment is part of Commodore's strategy to boost its presence in the business, government and education sectors worldwide".

Working from his Stockholm base, Schale will have responsibility for marketing Commodore products in Sweden, Norway and Denmark.

Commodore's plunge into specialist areas was recently broadened by its signing of the Quadrant Network Group to supply Amigas to the UK audio visual market.

Quadrant will aim its sales efforts at small production companies and government agencies.

Popular Euro show

WITHIN one month of the European Computer Trade Show being announced half the available space was booked says organiser Database Exhibitions.

The show – at London's Business Design Centre, April 16-18 – targets the leisure and small business sectors of the marketplace.

A Database spokesman said: "This unique exhibition is generating overwhelming interest, not only in the UK and Europe but also in North America".

The event received a fillip when the British Micro Federation announced it will throw its weight behind the show.

Key speakers from France, Germany, Holland, Italy, Sweden and the UK will appear at the Computer Trade Forum, the extensive seminar/conference programme being run in conjunction with the show.

German distribution giants Rushware and Ariolasoft say they will have a major presence.

The UK government-funded network of Language Export Centres has agreed to provide exhibitors and visitors with advice on how to market Europe.

"The computer industry has reacted in the most positive way possible to this event – by voting with its feet", said Michael Meakin, head of Database Exhibitions. "We couldn't be happier with the way things are going".

Into video with Amiga

COMMODORE is launching an attack on what promises to be one of the big consumer booms of 1989 – the combined use of computers and video.

To start its campaign it has joined with the leading video camera magazine *Video Action!* and Southampton distributor Addons to offer video enthusiasts a choice of three price slashing special offers.

Each package will contain an Amiga complete with genlock and graphics software for adding a truly professional look to video films.

There is a package to suit every pocket from a sub £500 start-up system to a fully professional system used by television companies and worth over £3,000. Every one is offered at a massive saving over normal retail prices.

The top-of-the-range package built around the Amiga 2000 is comparable to systems used by satellite TV, BBC and ITV companies.

It has an internal genlock allowing you to superimpose pictures, titles and sophisticated graphics. There are powerful facilities for producing sound effects and music, plus a real-time frame grabber

The computer comes with stereo colour monitor, 20Mb hard disc, 3.25in drive, 8Mb ram expansion board with 2Mb of ram already built in and includes two graphics packages.

Two packages will be built around the Amiga 500. The first has a colour monitor, external genlock, 512k of ram upgrade, a second 3.25in external drive and three items of graphics software.

The second package includes the Amiga 500, Commodore TV modulator, external genlock plus Fantavision and Photon Paint software.

With each special offer package there will be free delivery and unlimited hot line support and *Video Action!* is planning a low cost demonstration video to help first time users.

Other future developments will include bringing in some of the latest American graphics software and hardware so that purchasers of the special offer packages can upgrade their systems even further.

For more information on *Video Action!* see Page 83.

Award for Amiga games

THREE major awards two of them for Amiga hits – were won by Telecomsoft at the Industry Dinner. The 16 bit Game of the Year" award went to Virus, created for Firebird by Elite author David Braben.

Telecomsoft (01-379 6755) also took the Best 8 bit Graphics prize with Savage by Probe Software and Best 16 bit Graphics went to Rainbird's Starglider II by Jez San.

Games update

OCEAN has a busy release schedule. The French team responsible for Operation Wolf is putting the finishing touches to WEC Le Mans, while in the UK Robocop has been programmed by Peter Johnson. Easter should see the release of two film tie-ins; The Untouchables and Batman.

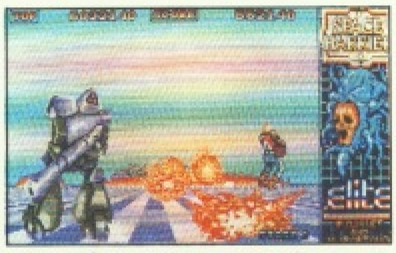
US Gold has two movie titles from Lucasfilm: Zac McKracken, based on the zany antics of a superhero, and The Last Crusade, which features Indiana Jones in his third and final adventure.

On the arcade front US Gold has announced the Capcom trio of Last Duel, LSD Storm and StreetFighter II, as well as the long overdue Gauntlet II, Road Blasters and Tiger Road.

Elite has been quiet for a while, but this should change with Space Harrier II and Ghosts n' Goblins out soon. While Elite has been a little slow with its Amiga versions such games are always worth the wait.

Barbarian II from Palace has been put back until Richard Leinfellner finishes coding the gameplay. Palace's other 16 bit game, Cosmic Pirate, is nearing completion and should be released this month. Written by Zippo Games, the objective is to fly around the Galaxy working for an arch criminal organisation raiding space trucks.

Terrarium from Image Works is an interactive arcade adventure set in a surreal fantasy world. The Bitmap Brothers are now working on a game which may become Xenon II for



Elite's latest Space Harrier

Image Works – a scrolling shooty game with Star-ray like effects.

Two titles are soon to be launched on the Cinemaware label – It Came from the Desert and Lords of the Rising Sun, which will both feature the customary high quality graphics and sound.

Recent releases have shown that Cinemaware has discovered that gameplay is as important as pretty graphics, so these should be ones to watch.



Terrarium's fantasy world

Caring for your Amiga

A NEW concept in support packages for the Commodore Amiga range has been launched by a leading UK systems house.

Amiga-Care allows subscribers to buy blocks of support units which can then be traded in for services ranging from training to consultancy/system analysis.

It comes from Burocare Computer Systems of Harrow, Middlesex, a company that has been actively involved in research and development for the Amiga since the machine was unveiled.

It is the brainchild of managing director Steve Laitman. "We feel that most support packages simply don't go far enough", he says. "This will be to Amigas what the Welfare State was to British people when it was first introduced – a revolution in the field of care.

"In effect, it will offer companies a service that can only be compared with having their own extensive in-house computer department".

The Amiga-Care package covers:

- Training of staff to meet specific requirements.
- Telephone support for both software and hardware through a dedicated line to a team of experts.
- On-site support from engineers who guarantee to to get any system up and running with a minimum of disruption.
- Technical reports and software updates custom-written to meet a participating company's requirements, so ensuring a constant update source on changing technology.
- Consultancy / system analysis offering specialist advice on what is required for future computerisation of companies.
- Accidental damage and all risk insurance.
- Loss of data cover.

Amiga-Care involves buying support units in blocks of 20, with prices starting at £100 a block. Bulk buying reduces this to £85 a block for companies acquiring 50 or more blocks.

Units are then exchanged for services ranging from one unit a solution for telephone support through 10 units an hour for on-site work up to 80 units a day for consultancy.

Insurance of both hardware and software and for loss of data can also be paid for using Amiga-Care units.

Star of the circus

AN Amiga 500 has been brought in to play a key role in the production of a new BBC1 television computer programme It is being used to prepare all the titles for Software Circus which is scheduled to go out on Sunday, April 2.

Using De Luxe Paint and De Luxe Video, it will provide all the computer graphics.

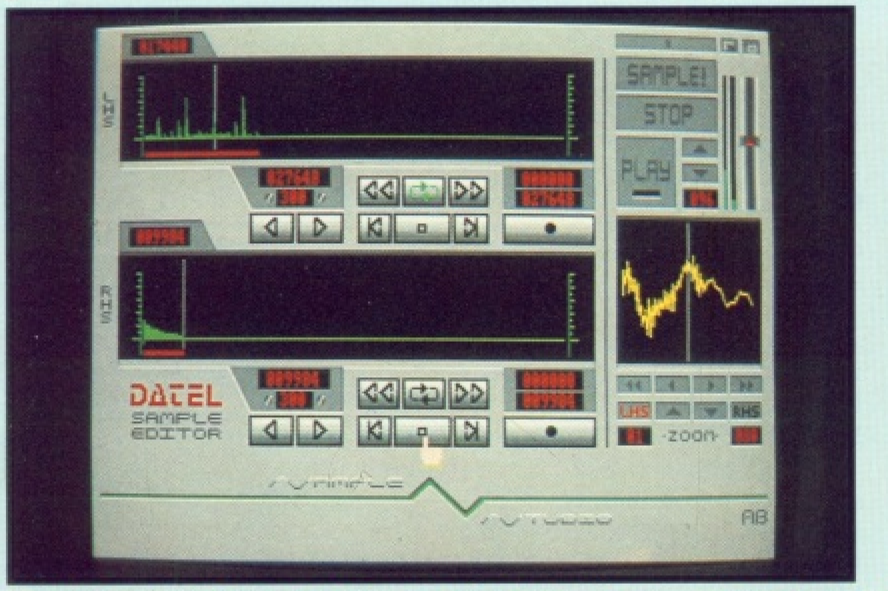
Produced by Bryn Brooks – with the help of John Allen and Ann O'Dwyer – Software Circus is aimed at the home computer owner who has still to graduate from games playing or word processing.

It will involve celebrities such as Gordon Honeycombe, Fred Housego and Tony Soper reviewing software packages on subjects ranging from bird watching to genealogy.

"We want to make people aware of the enormous variety of interesting applications for home computers", says John Allen.

Software Circus will be screened between 10am and 12.30pm and from 11pm to 11.30pm on Sunday, April 2.

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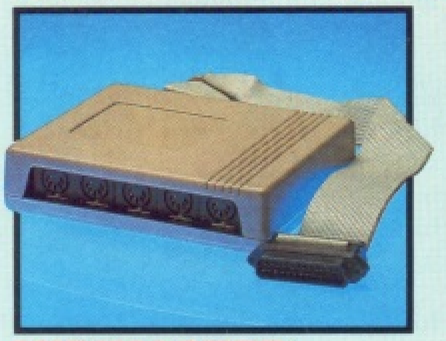
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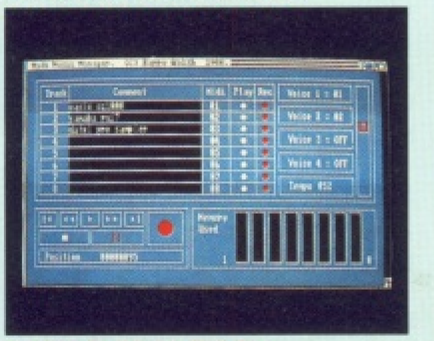
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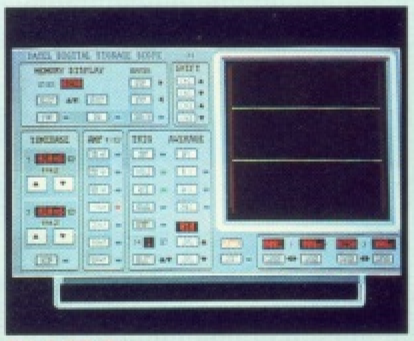
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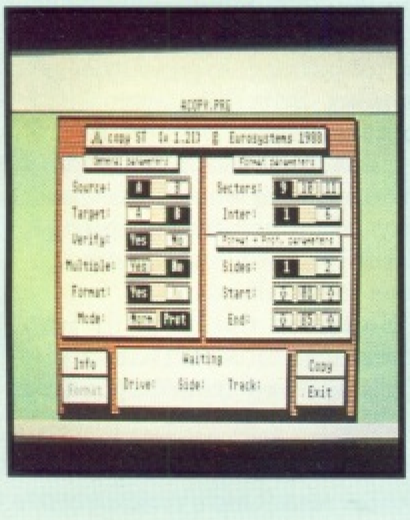
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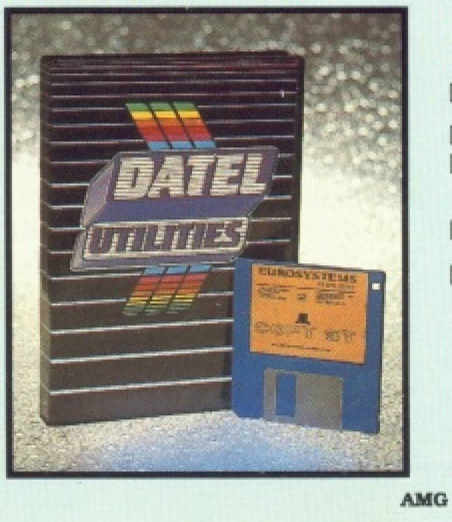
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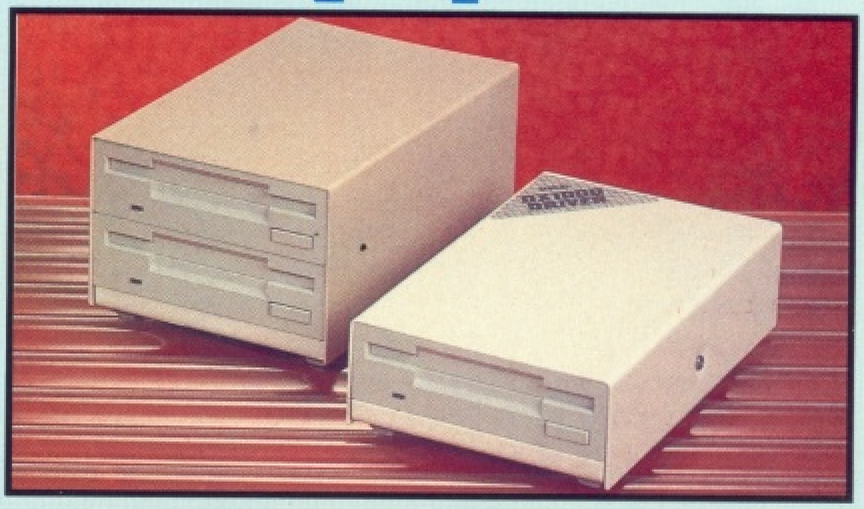
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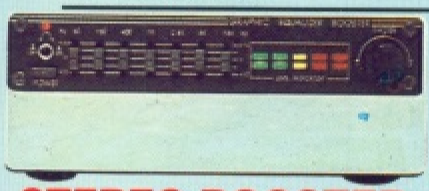
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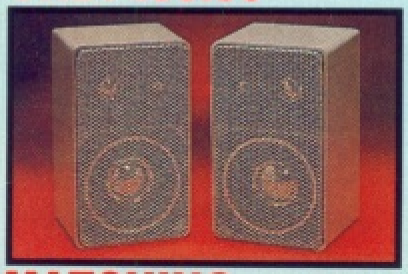


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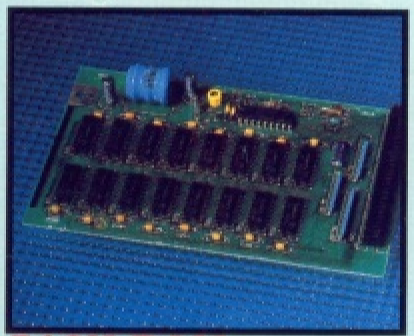
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Acti

Adven

Dave Eriksson answers st
saving worlds, tackling gr
and offering hints for the

THE latest fantasy role playing game to reach us is Questron II from SSI, distributed over here by US Gold. Those who enjoyed the Ultima or Phantasie adventures will find this to be in a similar vein. Questron I (CBM 64) had you fighting to save the land from an evil wizard, Mantor, and his use of the Evil Book of Magic. In that long drawn out struggle you were aided by the King's chief wizard Mesron.

In Questron II, Mesron recalls you to continue the fight against Mantor. The Evil Book cannot be destroyed, and he fears that Mantor will return and tap its power. You are sent back through time and space to ensure that the book was never created.

This sets up a fascinating paradox. To give you magical aid, you carry the Evil Book with you.

The screen displays countryside, towns and tombs in plan view. Dungeons are shown in 3D. To the left of the main display is an action menu and status report with comments on the four lines at the bottom of the screen.

You start with 15 points for your five main attributes – charisma, strength, agility, stamina and intelligence. These will be modified as you become wiser to the ways of Questron.

Mouse or keyboard commands are simple to master. The main menu offers a choice of: Arm (choice of weapon), Board, Climb, Dismount, End Game (save character), Fight, Game Speed, Inventory, Load Game, Magic, Loot, Speak, Use Item, Wear and Examine.

As you move the screen scrolls showing areas of the country. There are a number of towns. Most of them sell food – which has to be bought fairly often – weapons and armour, which come into their own later in the game. In some towns you may buy hit points, spells and different types of transport ranging from horses and llamas to ships and eagles.

Money is important and the two main sources are killing monsters or gambling. Casinos offer three games: High-Low, Blackjack or Wizard's Squares. A cool head, careful strategy and a strong will (leave while you are winning) can make you rich.

I would recommend an early visit to the nearest casino and a few games of Blackjack, saving your character each time you double your money. After this, check around the countryside so you know where things are and talk to everyone you can.

Your first quest must be to find the Hall of Visions in Redstone Castle. Here Mesron will contact you and give you a hint on what to do next.

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Simple mouse control



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wers a sterling call to arms,
kling a graphic interface
s for the toughest games

nturing

There are three cathedrals on this continent of Landor, under one of which is a system of tombs. Explore them thoroughly.

You may loot from any chests you find, but guards will try to kill you. Before you take them on make sure you have plenty of offensive spells.

Different monsters are to be found in the grasslands, swamps, oceans, forests, mountains and dungeons. Some of the travelling creatures are not immediately hostile. Meet one and you may be offered information or equipment at a knock down price.

When you have reached a certain point in your quest you will be able to travel across the sea to the Realm of the Sorcerers. Deep below one of the dungeons six evil twisted men are helping Mantor create The Book. You must destroy them and the incomplete book.

The dungeons are rife with traps. By this time you should be bright enough to spot them. Then all you have to worry about are the monsters that creep up from behind. Look out for the Scroll of Scalna – with its help you can map the twists and turns of any dungeon.

There are lots of things to find and use and all have some significance. Return to the Hall of Visions at regular intervals as Mesron may have something of importance to tell you.

All those physical types that delight in going off into the great blue yonder should polish their boots and oil that sword, for Mesron needs a hero. Just remember, get as much gold as you can, never talk to the guards and leave looting those chests until you are sure of yourself.

REPORT CARD

Questron II
SSI/US Gold
£24.99

STORY LINE
Logical, but more action than story.

AURA
Entering the dungeons can be a nail-biting experience.

STAYING POWER
Clues scattered around keep you on your toes and maintain interest.

GAMEPLAY
Mouse or keyboard make playing easy.

VALUE
A good starter for the RPG novice.

DIFFICULTY
Pay attention to what you are told and the rest should follow naturally.

OVERALL 79%

Good fun while it lasts, not difficult.





Watch out for traps!

A GOOD adventure is either written in such a way so as to not encourage you to look too carefully at certain items, or simply tells you that the table is "just a table".

Should you wish to pursue the more thorough approach of examining everything, I can recommend Uninvited by Mindscape, distributed by Mirrorsoft.

This has a similar operating system to Shadowgate (reviewed in *Amiga Computing*, September 1988). It is mouse controlled with only 10 commands – Examine, Open, Close, Speak, Operate, Go, Hit, Consume, Save and Load.

Operate is the key word. This enables a large variety of actions. For the normal get, drop and move, position the pointer over an object and drag it.

The graphics are very good, and although the picture showing your location is not that large, there is a surprising amount of detail.

The sound effects are well thought out: Thunder and lightning, creaking doors, cackles of bubbling maniacal laughter, screams and growling dogs . . . all ideal for a story of ghoulies and ghosties and things that go bump in the night.

Driving along a deserted country road with your younger brother during a storm, you suddenly have to swerve to avoid running over a shadowy figure that appears out of the dark. You lose control and crash.

Waking up, you discover that your brother is no longer in the car, presumably he has gone to call a tow truck. As you fully regain your senses, you realise that there is a strong smell of petrol. If you are quick, you may be able to get out before the car blows up. The need for a tow truck has suddenly become irrelevant.



Is the female the deadliest of the species?

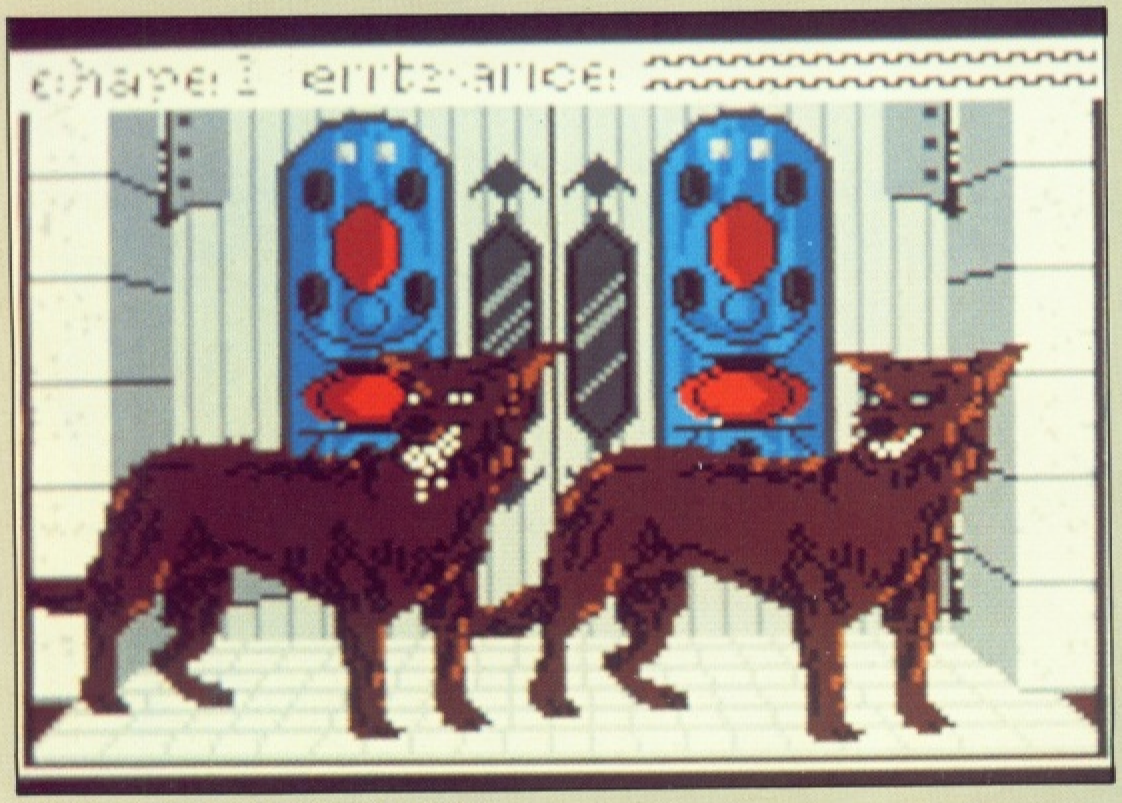
Only one house, an old Gothic mansion, is in sight. Your brother must surely have gone there for help. The front door is unlocked and as you enter it slams shut behind you. And so the adventure begins.

The kitchen is an investigative adventurer's paradise. Each utensil can be examined, even the racks holding them are separate items. Open a cupboard or container and an additional window will appear showing what is inside. Most contain nothing.

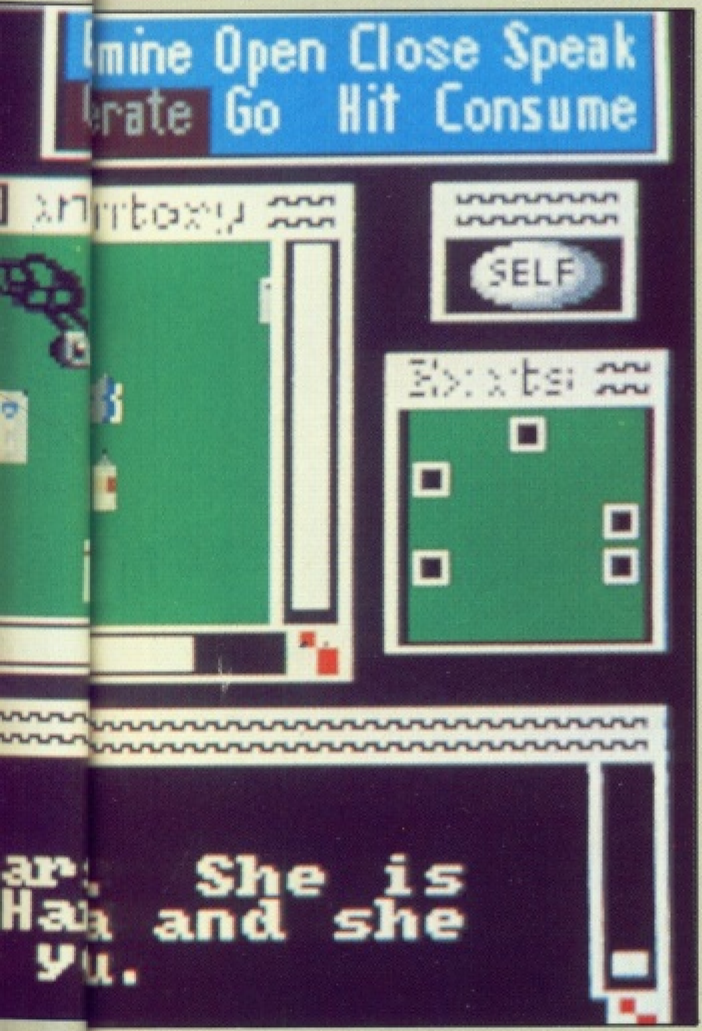
As you explore you will find it is extremely easy to die. Try and visit any of the rooms off the hall and what seems to be a beautiful woman appears. Ignore her and she turns out to be fiendish killer.

In a storage closet on the first floor you'll find several useful items, one of which will deal with the unwelcome woman in the hall. Just make sure it is ready for use before she appears.

Having mastered this puzzle, you are free to explore the house and gardens. Every location has plenty to



Modern setting – old fashioned horrors



check out. There is almost too much; it is far from easy to spot what is useful.

A most enjoyable adventure but do make notes of what you find. With so many objects lying around it is easy to forget exactly where you saw them.

REPORT CARD

Uninvited
Mindscape/Mirrorsoft
£24.95

STORY LINE
Old and corny but well presented.

AURA
Just right amount of subtle horror.

STAYING POWER
Good, but wading through useless items may dampen the initial thrill.

GAMEPLAY
Clever input routine allows commands more complex than you would think.

VALUE
Rather expensive but many hours' play.

DIFFICULTY
Not easy due to vast number of objects.

OVERALL *74%*

Classic story with good puzzles.



STUCK?

There have been several requests for help in solving adventures so I have compiled a list of hints and tips based on your letters.

ULTIMA IV

Can't find the Runes?

Humility	: Ask Barren in Paws.
Honor	: Ask Terrin in Trinsic.
Valor	: Ask Nostro in Jhelom.
Honesty	: Ask William in Moonglow.
Compassion	: Ask Pepper in Britain.
Sacrifice	: Ask Mischief in Minoc.
Spirituality	: Ask the Ankh in Skara Brae.
Justice	: Ask Talford in Yew.

Don't know the Mantra?

Humility	: Ask Gem in Vesper.
Honor	: Ask Kline in Trinsic.
Valor	: Ask Aesop in Jhelom.
Honesty	: Ask Cromwell in Moonglow.
Compassion	: Ask Cricket in Britain.
Sacrifice	: Ask Singsong in Minoc.
Spirituality	: Ask Barren in Skara Brae.
Justice	: Listen to the Druids chanting in Yew.

Short of money and hit points?	Ask Lord British about health.
Can't find Nightshade?	Try Virgil in Trinsic.
Can't find Mandrake?	Ask Calumny in Yew.
No sextant?	Chat in the pub in Jhelom.

LANCELOT

● *To defeat someone invisible* : Fight in the dark.

● *To get the harp from the Mermaid* : Tell Knight to WAIT, GOTO CORBIN then GET HARP.

● *To get past the invaders at Tintagel* : Get in the cart and wait until it arrives at the beach. There you could cause some damage to their fleet. You can also use the cart dodge to get into Meliagaunt's castle.

● *In the Quest for the Holy Grail, making the sign of the cross will help you determine if you are facing real people or some devilish apparition.*

BARD'S TALE II

The first puzzle snare on the third level of the tombs in Ephesus: Try and SAVE before you enter a puzzle snare. Once in, there is no way out unless you complete it correctly. The entry to this snare is a teleport square at 4N 21E.

The pool of foul water will poison you. You must defeat the toxic giant and then check if someone has found a torch. Let the old man join the party and put him in the lead. Give the torch to the old man and return to the entry point and the cloudy face.

You have won through, and will find the first segment of the destiny wand nearby. Beware of the spinner trap in the middle of the room between the old man and the toxic giant.

● *Let us know if you have any interesting solutions to puzzles in adventure games on the Amiga. Other people may well be waiting for your hints and tips.*

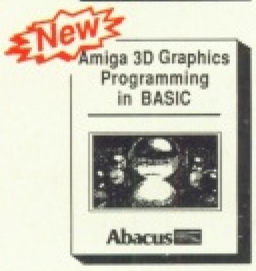
One Good Book deserves another and another, and another, and a...



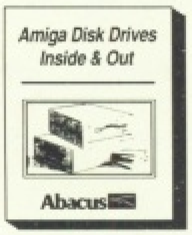
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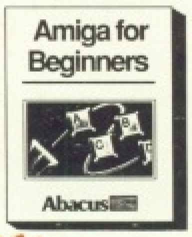
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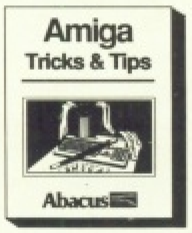
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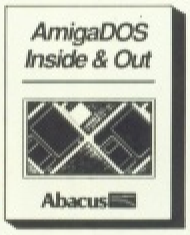


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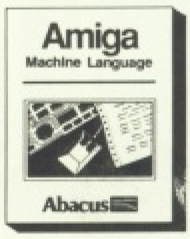


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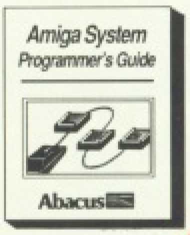
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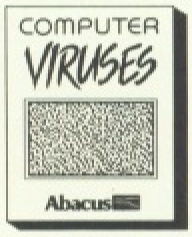
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Instant illustrations

Rupert Goodwins gets hooked on a small box which sucks pictures off a page into his Amiga

DESPITE the adverts, despite the very best efforts of the software writers, despite all the pulldown, click and cut menus in the world, ownership of an Amiga does not automatically an artist make. Paint programs notwithstanding, getting images into the machine is a difficult job for those not blessed with the drafting skills of da Vinci.

One way to bypass mouse mishaps is to buy a scanner. One of the more interesting ones comes from Cameron in Germany, the Handy Scanner, which is billed as the perfect companion to desktop publishing and artistic endeavours of all kinds.

It looks like a large black mouse. Computer, not rodent. On top there is a red window and a small, round button. At the sides it has a couple of switches and a knob. Underneath is a clear window and a pair of rollers. It plugs into the Amiga interface through a thin lead that exits from the back of the scanner, terminating in a joystick-like 9 pin D-type plug.

The interface is fairly small. It fits into the expansion socket on the side of an Amiga 500 and contains a few standard chips – nothing exciting. It has a through connector for hard discs, card cages and so on. No switches or setting up is needed.

The software comes on one disc. Unusually, for "copyright reasons", the disc cannot run immediately, instead you need to make a copy of your Workbench and then run an installation program. This copies files from the supplied disc on to the new duplicate, which is then used to run all the programs.

This process is quite slow. On my single drive, one megabyte A500 it took more than a quarter of an hour of incessant floppy changing to produce the working copy. Nobody else to my knowledge has had copyright problems with Commodore over supplying bits of Workbench with a product; indeed, some people were shipping chunks of Workbench 1.3 before it was generally available.

Odd, and a little frustrating.

The insides of the scanner are much more interesting. When it's in operation a row of very bright light-emitting diodes projects a line of light through the bottom window on to the surface of whatever is being scanned.

Above the window is a long thin mirror which takes the light that bounces off the surface and reflects it back down the scanner to a solid-state camera sitting right at the end of the case. This has a set of lenses which focuses the light on to a silicon chip.

Silicon is light sensitive, if treated properly. One of the reasons that chips are housed in black, opaque plastic is that if it was clear the circuits would be affected by light falling on them. It is even possible, with care, to slice the top off a memory chip and use it as a crude TV camera.

The image sensor in the Handy Scanner is similar, but because it has been designed to work as a camera it gives superior results. It produces an electrical signal corresponding to the pattern it sees reflected from the ►

mirror.

The rollers on the bottom of the scanner are connected, like the ball of a mouse, to a wheel with holes punched in it. As the scanner is pulled across a surface, the wheel rotates. A light shines on one side, and a sensor sits on the other.

As the wheel spins the light alternately passes through a hole and is blocked by the wheel. When the light flashes on the sensor it produces pulses of electricity. The Amiga counts these pulses. The faster they come, the faster the scanner is moving.

So as the scanner moves it produces two signals, one matching the white and black of a line of the picture it's moving across, and the other corresponding to the speed of movement. Software in the Amiga combines the two to display line after line and build up the complete picture.

Unlike a mouse, there is nothing to tell the computer in what direction the scanner is moving. So those with shaky hands or a sense of the absurd can stop in mid scan and push the scanner back up again, resulting in a mirror image of the picture that has been scanned before. Or by jittering the scanner as it moves down the page, patterns of words, like a dictionary in a hall of mirrors, can be produced. Which is of little interest except to producers of peculiar children's TV programmes or surrealists.

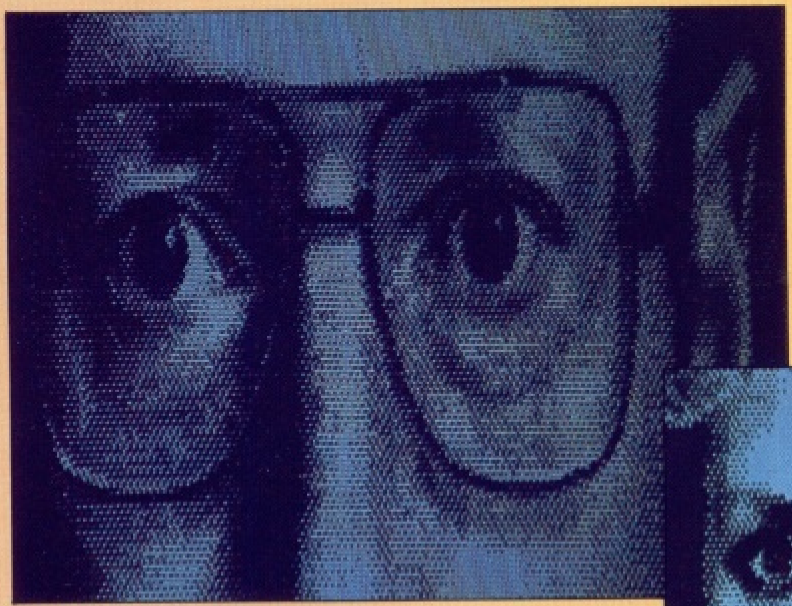
Without a great deal of care the image produced can be skewed or off centre if the scanner isn't exactly parallel with the edges of the page or image being scanned.

Getting it right needs practice, something that Cameron obviously understands, as the company includes a demonstration program on the disc. As the scanner is pulled across a picture, the image is displayed and when the bottom of the screen is reached the image wraps around and starts at the top again.

The demonstration finishes when the left mouse button is pressed. It's a useful tool for getting the hang of scanning, and it shows the differences in the scanned image produced by fiddling with the controls.

The other small program is Scan&save. This is similar to Demo, but it gives you one chance to scan a picture and then saves it to disc. It can then be loaded into whatever art program you own and messed around with to taste.

Both Demo and Scan&save can be used with an I option, which switches on Interlace mode. This effectively doubles the vertical resolution and captures bigger images with higher resolution. The picture flickers somewhat, of course, but if you want to use the scanner to capture images and text for reprinting it's worth putting up with the palpitations.



Sir Clive meets the scanner



A scan of Anne Brown shows elongation of image



The four grey scales

THE major program with the package is Painter, an art program, with most of the usual line drawing, pattern producing and picture editing functions. It also has, naturally, an option to import a picture from the scanner. So pick a photo, click on scan and grab some graphics. Then the program can be used to move a nose here, fill a tooth there, shade a siamese cat there. It's got a comprehensive range of picture-manipulation tools, and can work in up to four bit planes.

There are a number of fonts, stretching, shrinking, symmetry and geometric functions – the Read.me file on the disc expresses the earnest hope that the program is good enough to produce finished pictures without the user having to resort to other packages. I didn't like it as much as Deluxe Paint or Photon, but it does seem to have just about everything.

It knows about grey scaling, too.

◄

With the appropriate option, expanding an area of the picture with a pattern in it doesn't just enlarge the pattern, which can look crude. Instead, it expands the structure of the pattern, but keeps the shading at the same density.

It has seven picture buffers, which makes it possible to take several scans and combine them to synthesise the best overall result. Making good use of any extra memory, it can manipulate pictures much bigger than the screen up to 800 x 800 pixels.

The scanner under review could produce up to 16 shades of grey at 400 dots per inch. This gives good resolution, even considering that a complete screen width is only three inches of scanned image. There are also 200 and 300 dpi versions, with two and 16 grey scale detection. The window set into the top of the unit shows the part of the image being scanned, the button switches scanning on and off, allowing the scanner to be positioned without sending data to the computer.

THE controls on the side of the scanner select the sensitivity, contrast and grey scale selectivity. Different settings work best for text on a white background, text on a coloured background, black and white or coloured photographs. A good deal of experimentation is needed to get things right; time spent in the Demo program is never wasted.

It is not possible to scan a picture to produce a coloured image, firstly because the light source in the scanner is a very pure red, so trying to take a scan through a blue or green filter wouldn't work. Anyway, the problems of taking three scans in succession from exactly the same point at exactly the same angle to build up a colour result are almost insurmountable.

The pictures produced were clear and sharp. Once things were working, everything came under the red light – comics, adverts, newspaper photos. (No, not *that* page). The controls are sensitive to maladjustment. To save time, the manual recommends that a note is kept of the best setting for each sort of image.

Cameron also produces a text recognition package. Handy Reader takes scanned images of text and produces Ascii files which can be edited and printed using Ed, Notepad or whatever. Dead useful if it works, and – to an extent – it does. Before it starts, an appropriate font has to be chosen for the program to match the scanned image against. Some of the more common ones are supplied, but the software can learn to read new ones.

The learning process takes time, with the computer asking about each new letter. The program can cope with typographically complex text, with proportional spacing and kerning – making letters fit together – not causing too many problems. It can't read very dotty computer printout though. If the gaps between the dots are visible it foils the recognition algorithms.

There are indicators if the controls are mis-set and, given time and patience, chunks of text could be read in with a fair degree of rapidity and accuracy. I'm not quite sure that it is quicker than typing the stuff in, but it is more fun. It can be useful for someone unable to use the keyboard quickly.

There is also the possibility – although it wouldn't be simple to overcome some of the mechanical problems – of using the setup to help visually handicapped people to read. Either the voice synthesiser in the Amiga could speak the text or the scanned image displayed as large as possible.

THE documentation provided with the Handy Scanner is a small booklet in German, French and English. The translation is not by a native English speaker and although fluent and easy to understand there are a few strange idioms to amuse readers.

Most of the instructions are about the painting program and there isn't very much about the hardware or a lot in the way of "if your picture looks like this, then you need to do this". But there isn't a lot to learn about the scanner, and anyone with some Amiga experience should get to grips with the thing quickly enough.

The obvious areas where the scanner will be useful are DTP, poster or video production and general illustration work. Certainly, if I was producing a newsletter which could benefit from the inclusion of photographs, the Handy Scanner would be attractive. Likewise anything that makes heavy use of newspaper cuttings, extracts from books, or technical documentation that includes drawings. For leisure use it's a toss-up whether this or a video digitiser and camera would be more fun.

With care and practice the Handy Scanner can give excellent results. However, the areas in which it is a genuinely useful tool are limited. There is room for new software to extend these – how about a music reading program? But in companionship with a good printer, it can considerably enhance run-of-the-mill output.

If you're absolutely desperate to get holiday snaps on your Amiga, it's a must, especially in conjunction with Deluxe Photolab, which can print pictures many feet square. The possibilities for embarrassing your friends and family are limitless.

REPORT CARD

Handy Scanner
Cameron UK Ltd
01-499 9192
£499

USEFULNESS
If you are producing a newsletter which could benefit from the inclusion of photographs, the Handy Scanner will be attractive.

EASE OF USE
A good deal of experimentation is needed. Time spent in the demo program is never wasted.

SOFTWARE
The Painter program is not as nice as Deluxe Paint or Photon, but it does seem to have just about everything.

SPEED
By the time you've taken your hand off the scanner and have gone back to the Amiga, your picture will be waiting.

VALUE
Getting images into the machine is a difficult job for those not blessed with the skills of da Vinci. One way is to buy a scanner.

OVERALL 76%

The pictures produced are clear and sharp. If you're absolutely desperate to get holiday snaps on your Amiga, it's a must.

d on screen. Commands are
e to delete lines, or parts of
d to re-format paragraphs, as
delete, copy and move blocks

nd right margins may be
by clicking on the ruler line in
uired position and the text
e current paragraph – that in
the editing cursor is positioned

Record view provides a convenient way to scan through the file

Plain Ascii text files can be created, but this is a slightly long-winded process, requiring you to rename the file from its default name, reload it into the editor, delete any lines containing details of ruler lengths and ▶

Superbase™ PERSONAL 2

What do you do with the best-selling Amiga database? Precision, not being the kind of people to rest on laurels, improved it, as David Foster found out

– plus comms

PRECISION Software's Superbase database family has recently undergone further expansion and a re-alignment of the existing programs. The original program is still available, but at a reduced price and the subject of this review, Superbase Personal 2, slots into the middle, below Superbase Professional, which I understand has also undergone a review and now incorporates new features including those in Personal 2.

The original Superbase Personal was reviewed in our June 1988 issue, so I do not propose to go through every feature in detail, but will concentrate on the additions and enhancements to the original program. All of the existing features such as the powerful Query processes to select, sort and filter data, as well as generate reports incorporating data from a number of data files, remain.

SP2 is supplied on a single disc with a ring bound A5 sized manual of some 270 pages. Also included is a 14 page supplement covering extra features included since the manual was printed, or more detailed explanations of certain features. You also get the dongle.

insurmountable. ... the Atari

The pictures produced were clear and sharp. Once things were working, everything came under the red light – comics, adverts, newspaper photos. (No, not *that* page). The controls are sensitive to maladjustment. To save time, the manual recommends that a note is kept of the best setting for each sort of image.

The manual is clear, explains the features simply and includes a Getting to Know section, as well as a tutorial making use of the example files supplied on the disc. The manual is fully indexed and has detailed contents pages, making it easy to find the information you are looking for. Shame, a poor index is easy meat for the angry reviewer.

I initially thought that the



Table view displays as much of a data file as possible by adjusting margins

very much about the hardwa
lot in the way of "if your pi
looks like this, then you nee
this". But there isn't a lot to
about the scanner, and anyo
some Amiga experience shou
grips with the thing quickly e
The obvious areas where th
scanner will be useful are DT
poster or video production an

disc was
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nt. Most
ecision's
ssary to

avoid piracy, while still allowing owners to make back ups of their disc, but are Amiga owners really worse than PC or Atari ST owners, as versions for those machines are not dongled?

ONE thing I do not appreciate is waiting until the whole program has loaded before it tells me I have forgotten to plug the dongle into the second games port. I haven't forgotten actually, but I still have the Superbase Professional dongle plugged in and they are different. At this rate there could be soon be a flourishing market for replacement games port sockets. Time to buy an extension lead I think.

SP2 will run on any Amiga with at least 512k memory and a single drive, but a second drive will avoid a lot of disc changing. Alternatively, the required Workbench files can be copied to RAM: if you have more than 512k.

Initial setting up amounts to nothing more than making a back up copy of the disc. Superbase2 is not self-booting, so you have to load Workbench first. Alternatively, SP2 may be run from the CLI after a STACK 8000 command, but running

sflies again . . .

from the CLI is most conveniently done with twin drives.

Author, Simon Trammer is one of the most active developers in the Amiga community, and perhaps because of this SP2 follows the general feeling of Intuition well. This has paid dividends in the American market where Superbase has conquered traditional US xenophobia to become a best seller on the Amiga.

With the addition of its video/tape recorder buttons in a window at the bottom of the screen, used to move backwards and forwards through records as well as to call up frequently used functions such as filtering, or looking up a specific record, Superbase is nothing if not friendly. Many shortcut keystrokes are included for those who would rather be quick than pampered.

The changes to Superbase Personal to make SP2 can be classified as a mixture of new features as well as a number of extensions or alterations to existing procedures and the inclusion of some features only previously available in Superbase Professional.

Many existing features of Superbase Personal have been refined or simplified and some tasks are now done automatically. Loading a Query or Update results in any associated files being opened, for example.



It is easy to build up a complex formula to query a database

Extra field types have been added, including a time field type and multiple response fields allow you to store up to nine related items under one fieldname. You could, for example, have a field called address, with room for five separate entries, one for each line. The only drawback – an unfortunate one – is that only one may be displayed at a time in a record, Ctrl-N and Ctrl-P being used to display the next and previous entries.

Text fields may be forced to upper or lower case, or with first character capitalised if required. Fields may also be set to a read only status, particularly useful with Constant field data. Serial fields are supported, where an incremented value is automatically assigned to the field in each new record.

THE batch mode of data entry now provided, speeds up data entry at the expense of data security during the batch process. Whereas normally each record is saved when entered and housekeeping is carried out, when batch mode is in use this is only fully carried out at the start and end of each session. Unless you are prone to crashes, power cuts, or are of a nervous disposition, the time saving is well worthwhile.

One of the features borrowed from Professional, but enhanced a little, is the text editor. This allows you to create text files and mail merge letters that will make use of data in the database. It is more like a simple, but quite practical, word processor than a text editor.

It can be expanded to full screen by clicking on a special gadget. Once open, you can switch between it and the database using the normal gadgets to push/pull the windows to back/front. Alternatively, you can close the window, removing any text from memory.

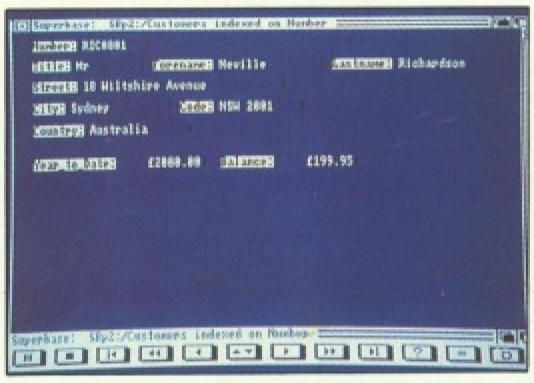
The editor is not a full featured word processor, but includes word wrap and the ability to insert bold, underline and italics in any combination, with the effects displayed on screen. Commands are available to delete lines, or parts of lines and to re-format paragraphs, as well as delete, copy and move blocks of text.

Left and right margins may be altered by clicking on the ruler line in the required position and the text from the current paragraph – that in which the editing cursor is positioned – to the end is automatically adjusted to suit.



The import file requestor caters for a number of file types

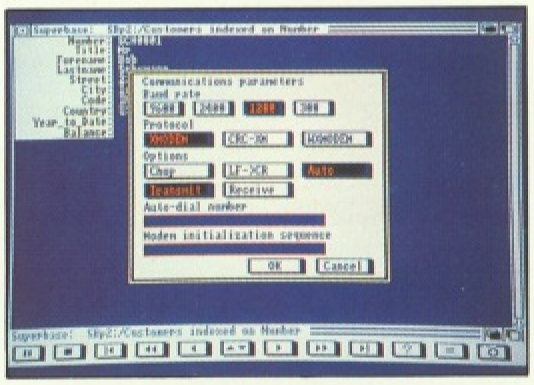
Different settings may be used in various parts of a document, but one minor irritation is that altering the settings for a paragraph in the middle of a document will cause the remainder to be re-formatted, probably requiring you to re-adjust



The layout used by the form view option can be altered at any time

and re-format subsequent paragraphs back to their former layout.

Printing options are limited, not allowing you to set line spacing, or to change the type of justification in use. There are no facilities for headers and footers or page numbers.



Record view provides a convenient way to scan through the file

Plain Ascii text files can be created, but this is a slightly long-winded process, requiring you to rename the file from its default name, reload it into the editor, delete any lines containing details of ruler lengths and ►

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then re-save it. Surely an Ascii save option would have been simpler?

Mail merging is now possible, making use of text files created with the text editor, providing a completely self contained facility without the need to export data and create special files in your word processor. When creating a mail merge document, the required field name is placed in the document, wrapped in ampersands – &name&, for example. Text is not re-formatted during printing, so long or badly placed data entries can cause a mis-alignment of text if care is not taken.

Process import now provides facilities to convert files created by other programs into Superbase files. Data from Lotus 1-2-3 and Logistix/Superplan files may be imported and converted, as well as DIF format files.

Both dBase II and dBase III database files may also be imported as well as Ascii files in either fixed length or delimited form. In the above cases, the data is converted directly into Superbase format, but Ascii file import is treated slightly differently in that you must create a suitable SP2 file into which data is imported.

Data may also be exported to the same formats as described above. The Ascii export option lets you specify the characters required for field and record separators and also whether data should be wrapped in quotes or not.

Both the import and export options are very flexible and powerful and should make conversion of most types of data into SP2 form a practical proposition, as well as providing a convenient way of exporting data for use by many other programs.

If I wanted to be really critical of SP2, my biggest complaint would be the relatively limited number of ways in which data may be displayed on screen, with only a basic report layout, a spreadsheet type table layout and a form layout that can be rearranged.

There are no facilities for adding textual comments or information and I wish that the custom form facility of Superbase Professional had been included.

The original Superbase Personal has acquired a reputation as an an excellent program, and Superbase Personal 2 can only improve it further with its combination of enhancements and completely new features.

Superbase on line

PERHAPS the most unusual aspect of SP2 is the inclusion of a comms facility. This interested me as I use comms a lot, but I suspect that interesting though it may be, it will have little purpose for many people.

It is, however, a competent general purpose file transfer program in its own right and could prove useful to anyone wanting to transfer any data, not only Superbase files, between different computers.

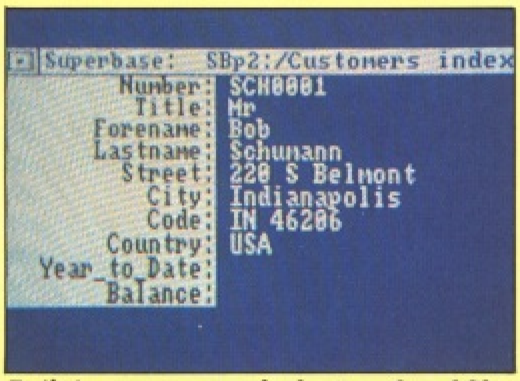
Comms must have been a late addition to SP2, as it is not even mentioned in the manual, the only reference to it being in the supplement, with a further update in the README file on disc.

Files can be transmitted to, or received from, other computers, either by modem or by direct connection and I transferred files in both directions between the Amiga and a PC, both by direct connection at 9600 baud and over the telephone at 1200 baud.

Baud rates from 300 to 9600 are supported, but not split baud rates – 1200/75 and Xmodem Checksum and CRC, and Wxmodem protocols are supported. If Wxmodem is used, it has a 'fall back' capability to Xmodem if the other computer is not using Wxmodem.

In addition to facilities for specifying modem initialisation strings and the number to dial, options are available to convert the Amiga line feed character used in text files into the carriage return characters used by PCs and many other computers. This only works when transmitting text, and the reverse procedure is not possible.

Another option is auto and, if selected, a header is transmitted first, containing the filename. This is a slightly odd arrangement, as Xmodem does not normally permit this and I suspect will only work when two Superbase Comms programs are talking to each other. I was unable to find any of the standard comms protocols, such as Modem7 or Ymodem, that would work with it.



Built-in comms speeds the transfer of files. Ideal for PC to Amiga ports

The comms facility worked well and the only problem I had was that if SP2 was waiting to receive a file there is no apparent way to escape from it until the line is dropped by the other computer.

Perhaps Precision might like to develop the Comms module into a full blown Communications program in its own right at some time? The foundations are certainly there.

REPORT CARD

Superbase Personal 2
Precision Software
£99.95

USEFULNESS
Extremely practical with many new features to make it even more useful as long as you do not want a programmable database.

EASE OF USE
Easy to use once you have come to grips with the Query and Process facilities.

INTUITION
Follows the Commodore guidelines well.

SPEED
Good on the whole, though you sometimes have to wait a second or two for requestors to appear.

VALUE
The original version was good value and this is even better at the same price. You can upgrade for £34.95.

OVERALL 86%

At £59.99 Superbase Personal I is now a bargain.

Sprechen Sie Amiga?

Max Tennant steps out from behind his joystick and goes in search of the Amiga community. Photos by Jez San

GERMANY, land of leiderhosen, Porsches and liverworst. Where better for a conference to bring together all the European developers? Well, anywhere really. Have you ever *been* to Germany? If it wasn't for Belgium it would be the most boring country in Europe.

Perhaps that makes it a better venue for a conference. I'm not sure anyone would concentrate on Amigas if they had Bondi beach as an extramural attraction. The 305 delegates to the developers conference descended on the Intercontinental hotel in Frankfurt. A smart place – all marble and lights.

There was a little gossip, and some details of announced but unavailable products. Amiga 2000 owners who have the standard A2090 hard disc controller and who were aggrieved at the announcement of the A2090a autoboot controller will be placated by the news that Commodore will be producing a card designated the A2090b. It plugs into the big Amiga and allows a standard A2090 to autoboot. Availability and prices are still to be fixed.

The big news centered around the enhanced chip set – ECS. This has been mentioned before in *Amiga Computing*, but the big thing at the conference was the chance to see the chips in action. Some developers took samples away after winning them in a raffle.

ECS lets the Amiga use 1Mb of chip ram – the memory the blitter can access. Up until now, programs which used a lot of chip ram, mainly video applications, were limited to a maximum 512k. The ECS will work with A500s and B2000s to give twice as much chip ram. Future Amigas will use ECS to better effect, offering 2 meg of chip ram if fitted.

The enhanced chip set really comes into its own when some extras are added. A high resolution mode without the interlace flicker displays 640 by 400 pixels or 320 by 400 pixels in four colours, but it needs an expensive multisync monitor.

While ECS should be 100 per cent compatible with existing machines – although only time will tell – it needs Workbench 1.4 to use the extra screen modes.

This new version of Workbench is probably a year from completion but will offer a number of major improvements, including the ability to run ECS, faster floppies and a standard requestor. It is a major upgrade so some programs, albeit those which do not follow Commodore guidelines, will not work.

While rumours of an Amiga based games console circulated Commodore refused to comment.

The main aim of the conference was to teach programmers how to get the most from an Amiga. Ratings boxes at the end of software reviews in this magazine include a score for Intuition. This is supposed to be a reflection of the Amiga-ness of the program. Does it multi-task? Does it use the right sort of requestors. The aim is to encourage a coherent user interface so that a user can go from one program to another with minimal recourse to the manual.

Anyone who has been to a conference should have a good idea of what is expected. They may then decide to break the rules, but it is always best to know the rules first. An example of the information Commodore dispenses is shown in the panel on this page.

Americans talk about conferences as being a good place for networking, which is their way of saying meeting people. And there were some really interesting people to meet.



Official warning to rom-jumpers, structure-hackers and others – from Commodore Engineering, Commodore Amiga and CATS.

WE who bring you the Amiga want to make it perfectly clear that if you don't follow the rules, you *will* break.

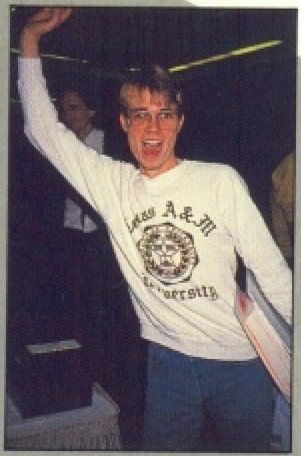
The following practices are not supported: Jumping directly to rom code, modifying or depending on private system structures, depending on the addresses of system structures or free memory, ignoring hardware or software interfacing specifications.

Do not jump into rom. Beware of any example code that calls routines in the $F80000 to $FFFFFF range. Those are rom addresses and those rom routines *will* move. The only supported interface to system rom code is through the provided library, device and resource calls.

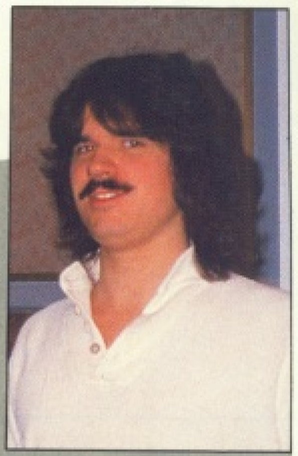
Do not modify or depend on the format of the private system structures. This includes the poking of copper lists, memory lists, and library bases.

Do not depend on any address containing any particular system structure or type of memory. The system modules dynamically allocate their memory space when they are initialised. The addresses of system structures and buffers differ

Tom Rokicki from Radical Eye Software was flown over by Commodore to give a talk on the blitter. Tom wrote blitlab and produced the Amiga port of TeX, the desktop publishing system reviewed in *Amiga Computing* last November. Texas Tom's odd pose is due to the weight of the conference notes he is holding and has nothing to do with his hobbies of disco dancing or killing scorpions which crawl into his boots.



Dave Haynie, designed the A2620 processor board reviewed this month. He is currently working on a 68030 board, which has been tested at 33MHz. This is faster than either the newest Apple Macintosh – which only runs at 16MHz or the state of the art NeXT machine from ex-Apple president Steve Jobs. Dave's devices may be the fastest thing you'll see, but after a heavy evening's networking he was a mite slow in getting to his lecture.



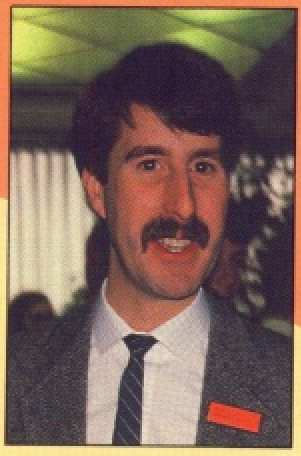


Dr Rahman Haleem is the UK technical manager for Commodore. Based in Maidenhead he coordinates the work of CATS UK and runs the Amiga Developers Advisory Board. All UK software houses should be in touch with Rahman to make sure their programs will work on future Amigas.



Rick Glover, head of CBM Europe's technical support, is an amusing techie who has a Phd in aerodynamics and a degree in electronics. Before joining Commodore he specialised in combat aircraft design and control in aircraft, flying his own planes. Rick is an American but lives in Italy and commutes to work in Germany.

Jeff Porter, Dave Haynie's boss, led the design team on the A500. He heads hardware development but met all questions about changes with the comment "apple pie and motherhood". Jeff has worked at Commodores West Chester offices since the days of the Vic 20. Before the Amiga arrived he worked on an LCD portable, but said that Commodore would rather work on new machines than versions of old ones.



Gail Wellington, the mother of Amiga, looks after the software developers. Looking great after recent bad health. An American who loves Britain, used to be head of Commodores techies in Britain but was promoted to the US. Their gain was very much our loss. Gail's dedication to Commodore is total. She makes sure good ideas get turned into actions. Much of the success the Amiga has enjoyed in the US can be attributed to Gail.



with every OS, every model, and every configuration, as does the amount of free memory and system stack usage.

If you are using the system libraries, devices, and resources, you must follow the defined interface. Assembler programmers – and compiler writers – must enter functions through the library base jump tables, with arguments passed as long and library base address in A6. Results returned in D0 must be tested, and the contents of D0-D0/A0-A1 assumed lost after a system call. Do not use assembler instructions which are privileged on any 68000 family processor. All addresses must be 32 bits. Do not use the upper 8 bits for other data.

Do not execute code on your stack or put system structures on your stack. Do not use the TAS instruction.

Do not use software instruction based timing loops or delays.

If you are programming at the hardware level, you must follow hardware interfacing specifications. All hardware is NOT the same. Do not assume that low level hacks for speed or copy protection will work on all drives or all keyboards of all systems or future systems.

Software distributors who purchase or contract software from outside programmers must make sure that the programmers are aware of correct programming practices and are providing software which will not break on different machines or different OS revisions.

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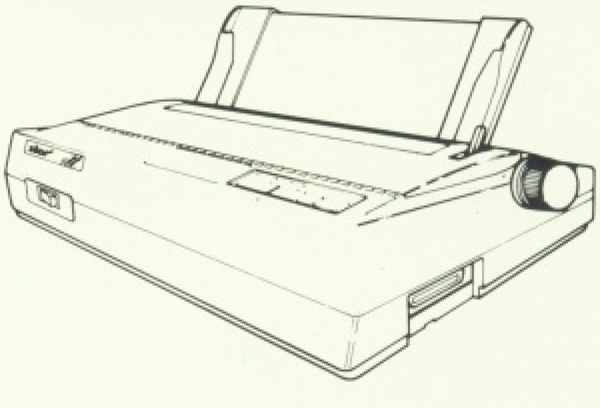


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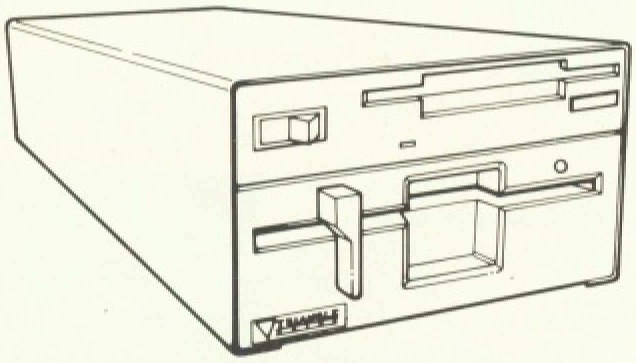
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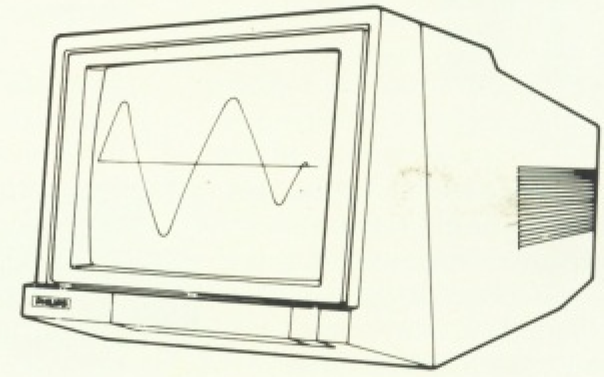


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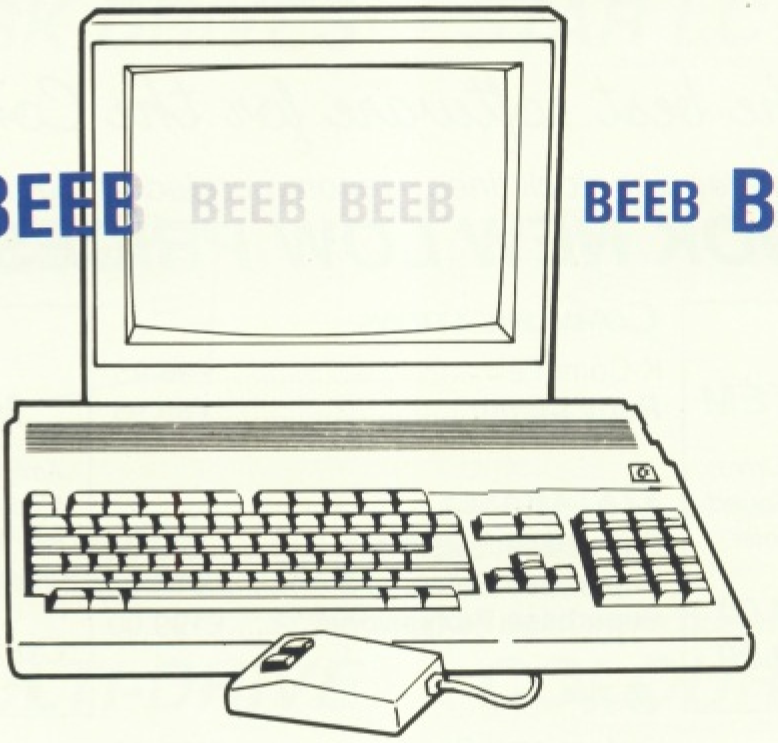
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Commodore

HIGH SPEED BASIC

Paul Ockenden test drives a program which will streamline your code

BASIC, love it or loath it, is a computer language which is here to stay. Virtually all micros are shipped with a version and it is about the only computer language taught in our schools.

There is a lot of anti-Basic feeling among the so-called real programmers, but much of it is based on experience of weak Basics supplied with the 8 bit micros of yesteryear.

These days the versions that come with the average home computer tend to be quite good, enabling users to write well structured code with hardly a GOTO in sight. AmigaBasic, as supplied on your Extras disc, is a powerful language – it's just that the implementation is poor.

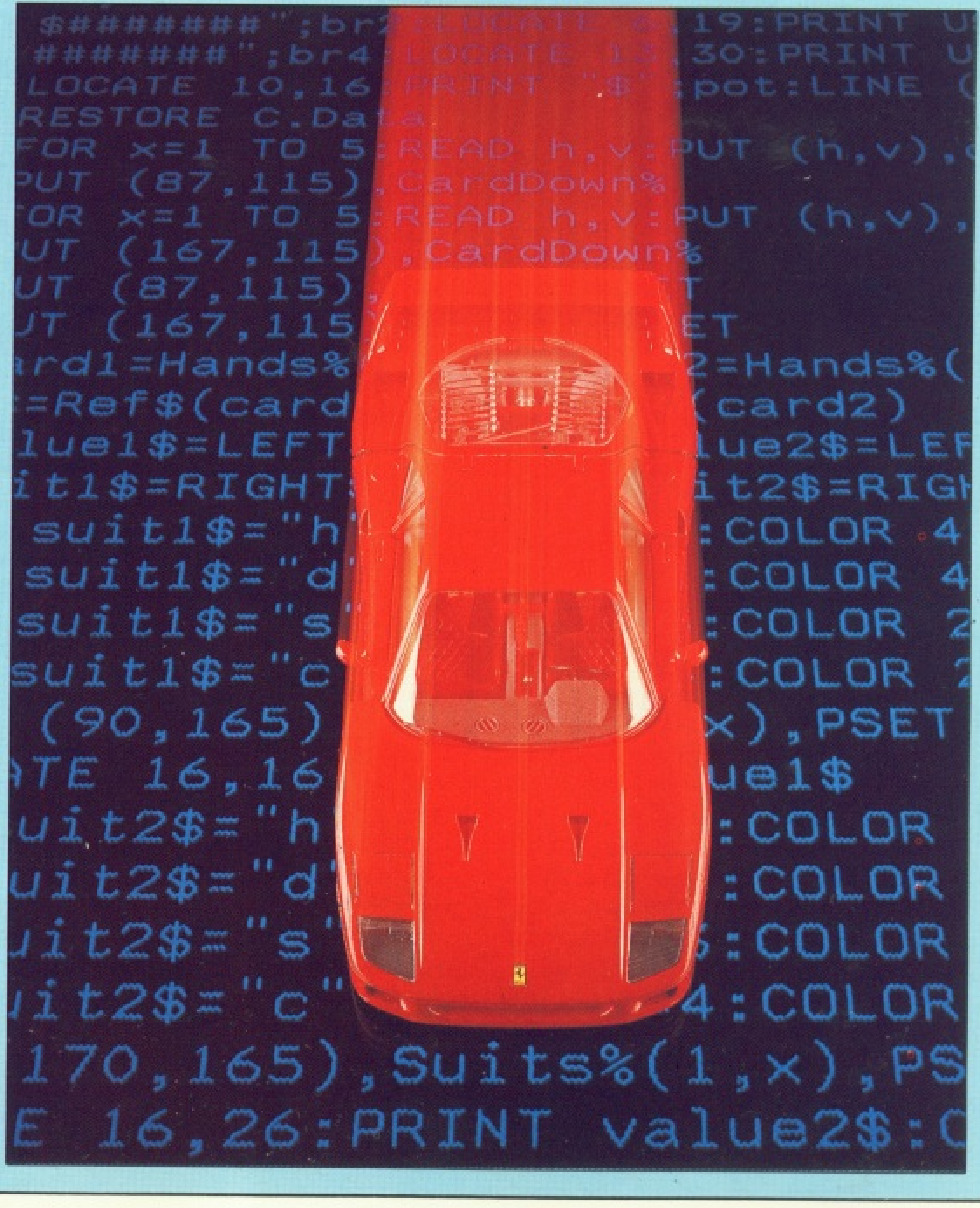
Apart from being an interpreted language like most versions of Basic and thus inherently slow, AmigaBasic also suffers from having an awful – some folks call it klunky – user interface. HiSoft has overcome these problems by releasing its popular Basic compiler for the Amiga which is or soon will be fully compatible with the standard AmigaBasic, as well as being nearly compatible with Microsoft QuickBasic 3 for the PC, and HiSoft's own Basic for the Atari ST (spit!).

I was supplied with version 1.02 of the compiler, and I found a few compilation bugs, some major, plus certain incompatibilities with AmigaBasic. For example, LOOP was a reserved word, so couldn't be used as a variable name.

As a result of discussion between yours truly, Ed, and HiSoft, a fully compatible compiler will be available soon. HiSoft should have fixed the bugs I found by the time you read this.

THE compiler comes on two discs. Disc one is a nearly complete Workbench 1.3 distribution disc – only the fonts, utilities, and default editors are removed – along with one version of the compiler. On disc two a second version, plus lots of examples and demo programs. The 1.3 Workbench supplied is the final release, not one of the test versions, as sold with some other products.

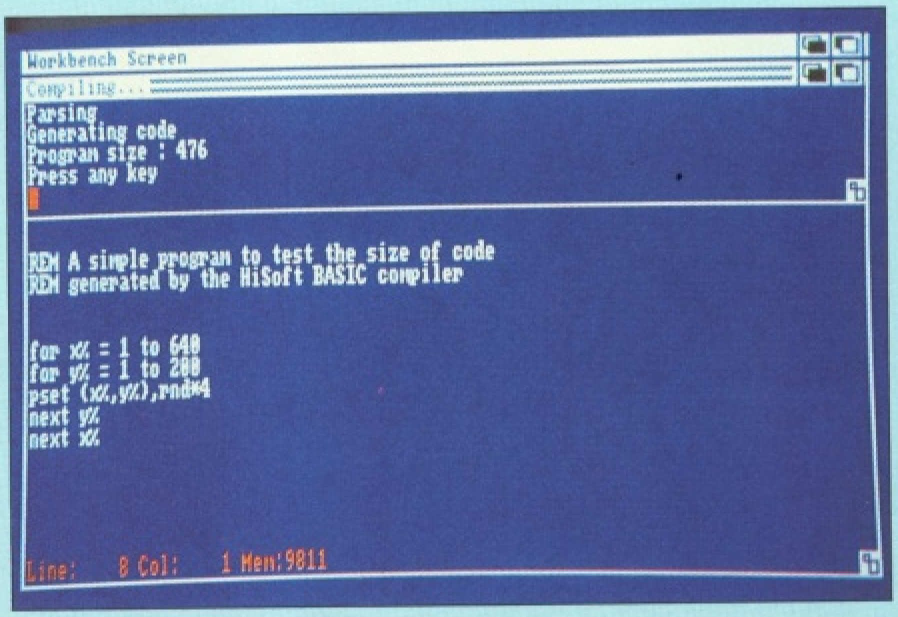
The compiler on disc one is a cut down version only able to produce



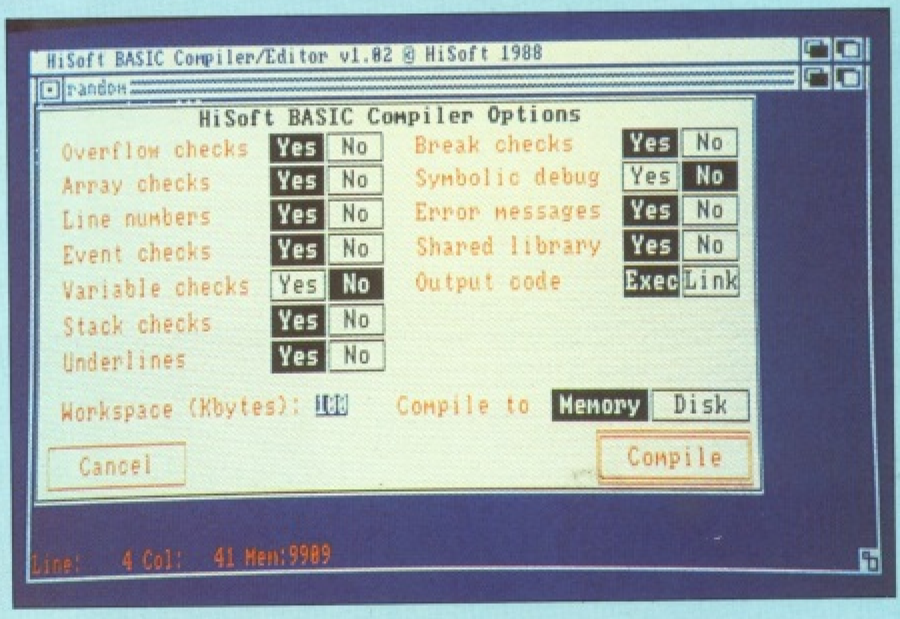
code which requires access to a shared library called hisoft.library in the LIBS: directory. The version on disc two uses more memory, but has the option of producing fully standalone code.

As HiSoft Basic is supplied with Workbench 1.3, it is able to make use of the available improved maths libraries. These are much faster than the 1.2 versions and will automatically use a maths co-processor if you have one fitted. This does mean, however, that any compiled code will only be able to run on a Workbench 1.3 system (or a doctored version of Workbench 1.2)

The manual, in A5 ring bound format, was of a very high standard, well printed, logically laid out, and even witty in places – a great improvement over the manuals HiSoft used to supply with their early Spectrum compilers.



The development environment makes full use of multi-tasking



The fewer options you use the faster programs will compile

CUSTOMERS for the first 1,000 copies of the compiler are supplied with a free copy of the Abacus book AmigaBasic Inside and Out. This is quite well written – the text anyway, some of the code leaves a lot to be desired – and forms an ideal accompaniment to the HiSoft manual. Many examples from the book can be found on disc two.

The HiSoft Basic programming environment is along the lines of that started by Turbo Pascal – you edit your code in one window, compile in another, and run in a third. If any errors are found in the compilation you are taken back into the editor at the line where the error, occurred.

This seemed to be fairly well implemented, with good use of the Amiga's intuition environment, although I didn't like HiSoft's editor – particular ire being reserved for the clumsy search and replace facility.

I would have liked to have seen the editor capable of loading tokenised AmigaBasic programs, and expanding them itself, rather than you having to load the code into the AmigaBasic interpreter, and then saving it using the "A" option to get an Ascii file.

It is possible to compile your programs in ram or to disc. The latter option means your finished program can be run outside the HiSoft environment. When compiling to disc, the program generates the necessary icon file to enable it to be selected from the Workbench, and the code produced seems to multi-task properly under the Amiga Intuition environment.

The compiled programs also work properly when called from the CLI. The code produced by the compiler is fully re-entrant, and can be made resident when using the Workbench 1.3 shell.

The speed of execution and code size can be optimised by turning off various run time error checks. As an example of the code size produced by the compiler, a simple program which plotted every point on a 640 x 200 pixel screen in a random colour – and with all error checking turned off – was 452 bytes long when compiled using the hisoft.library option, and 13,156 bytes when compiled as a standalone version.

As for speed of the compiled code, HiSoft claims that the compiler will run the standard Sieve benchmark 50 times faster than AmigaBasic. I wrote a few simple programs, and wasn't able to get anything like that figure. A simple program to display a sine wave took 50 seconds in AmigaBasic, and 12 seconds using HiSoft.

I found that a selection of compiled, programs varied from about the same speed as AmigaBasic for disc intensive applications to around 30 times faster for pure maths code. I also noticed that the compiler doesn't do much optimisation, so it's best to hand optimise where possible.

THERE is no limit to the size of the program that can be compiled, assuming you have enough ram. Likewise string and array variables can be as large as you like. This is a great improvement on AmigaBasic which allows about 24k for programs and just over 4k for data.

All AmigaBasic's graphics and sound functions are provided and its similarity to GW-Basic supplied with ▶

most PCs makes it a fairly simple job to port Basic applications from other machines.

All compiled programs have the banner "Compiled with HiSoft Basic" in their default window, so there's no pretending that your masterpiece was lovingly hand crafted in assembler. However HiSoft does not ask for royalties for any code produced by the compiler which is subsequently sold or given away, it only asks that it be given credit where credit is due.

The compiler will run on a standard 512k single disc drive Amiga, although, as ever, an extra 512k and second disc drive are very useful. I would suggest that the extra ram would be particularly appreciated.

Apart from the compilation bugs and incompatibilities mentioned the program behaved well. At no time during the review did I get a visit from the "Guru", and I found that the HiSoft editor/compiler environment lived quite happily running alongside other programs such as word processors and comms software.

Minor upgrades will be for a nominal fee – or even free if you report an unknown bug – major revisions will be charged depending on the amount of added features (not bug fixes) in the new version. A recent revision to the ST version of HiSoft Basic was charged at £7.50

Is HiSoft Basic for you? If you have plans to write the blockbusting Amiga arcade game for next Christmas, the answer has to be no. Your money would be better spent on an assembler and some good books.

If you are an experienced Basic programmer then HiSoft Basic would make a welcome addition to your software collection. It is quite inexpensive considering the facilities it provides, and based on its track record, you can expect an excellent level of support from HiSoft in the future.

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£79.95 (limited period)

USEFULNESS
For the programmer on a tight budget, but wanting more from AmigaBasic, this might well be the answer.

EASE OF USE
A nice fully integrated development environment which reduces the time taken to get your programs up and running.

INTUITION
Thankfully, HiSoft was not tempted to produce YASTP (Yet Another ST Port). This product uses the Amiga well.

VALUE
While 80 quid isn't exactly pocket money level, the two well known C compilers both cost many hundreds of pounds each. I suspect it will sell well.

OVERALL 87%
HiSoft has managed to take AmigaBasic and mould it into a credible product.

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Speed demon



One day all Amigas will be made this way. But for now only the lucky few can afford one which runs five times faster than normal. Jez San is among the first of the few

LAST August I reviewed the CSA 68020 card. This was a no expense spared gizmo for speeding up your Amiga a few times. Fully configured with two megs of ram would set you back £5,000, about the same as an average car.

I mentioned at the foot of the article that the Commodore card would be out soon, hopefully bringing with it more bangs per buck, and probably being a bit kinder to the system reliability. Well, it has arrived.

The Commodore A2620 is a neat, densely-packed expansion card that plugs into the co-processor socket in an A2000. It will not work in an A500 or an Amiga 1000.

If you own an early German A2000 you will need to remove the 512k of ram that previously occupied the first socket, but that is not too much of a loss considering the advantages of your new acquisition, not to mention the Joneses don't have one yet.

Installation is simple. Don't even bother reading the manual – unless you have to be told to plug the card into the only conceivable socket it could fit in. I mean, it's not like a joystick extender, or mouse mat – they require immense technical engineering skills before you are qualified to connect up.

Installing a CBM 68020 card is a trivial matter. Power up, and if all goes well, you should be welcomed by that familiar left hand holding that upside down disc. Say, why is that guy left handed anyway? (The artist who drew it was right handed, copying his left hand holding the disc, so they say).

By holding both mouse buttons down with your right hand, and pressing various other pointy-parts of your anatomy on *Ctrl+Alt+Delete*, erm, I mean *Ctrl+Amiga+Amiga* you get a menu of three configurations. You can either boot into a vanilla AmigaDos 68000, supa-doopa Amigados 68020, or even 68020 Unix, though the last requires a frightenly expensive Quantum 80 megabyte hard disc laden with goodies before it'll work.

UNIX systems come with 4Mb ram so the price of £3,000 for the card and software isn't quite as outrageous as it first seems.

The older German A2000s don't have the option of going back to the 68000, as they had a screwed up bus design which didn't allow the processor to go tri-state. And here was I thinking that Germany only had two states.

If you don't bother holding down your mouse buttons on startup, the machine will default to AmigaDos 68020, unless you have been playing with your jumper switches on the main board.

The A2620 board comes in its minimum configuration with a 14.3MHz 68020, 2Mb of fast 32 bit ram (100ns), a 14.3MHz 68881 (that's a math co-processor to you and me) and a 14.3MHz 68851.

The last chip is an MMU (Memory Management Unit) which performs virtual memory and address translation tricks required by Unix and other power-operating systems. Like Ariel automatic, it's a vital component.

If your 68020 card hasn't got it, you ►

◄
can't run Unix. Some may see this as a positive advantage. I think an MMU is the way to go, which is just as well, since Motorola has built one on to the 68030 chip we'll all be using in a few years time.

In normal AmigaDos mode the 68851 is not used.

MATHS freaks can change the 14.3MHz 68881 for a 25MHz one and move a jumper on the board. This will speed up things like ray-tracing, but if you have looked at the price of 25MHz 68881s you are likely to have decided it is better to grow old waiting than blow your savings on one chip.

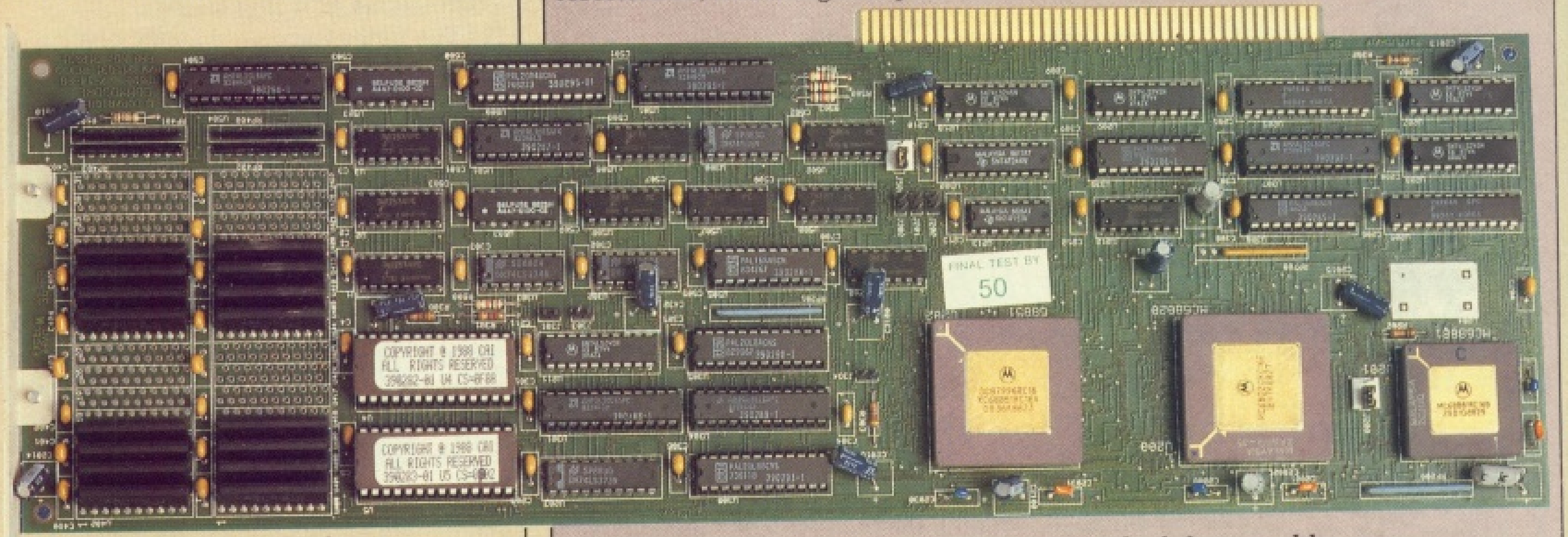
The 68020, being a 32 bit processor, isn't being run at full tilt unless it finds 32 bit ram. Cheaper 68020 cards that lack this are not going to offer significant speedups.

The Commodore's A2620 runs its clock at twice the standard speed of an Amiga, making it twice as fast, but the 32 bit ram and sophisticated cache inside a 68020 ends up quadrupling the speed.

For mathematical applications this will be even better, as the 68881 can do some things at 10 or 20 times the speed that the normal Amiga math routines can manage, and if you use Workbench 1.3 the improvements will often be transparent. The advantages of a *proper* operating system.

To setup a CSA 68020 card with the equivalent features and functions of the Commodore A2620 would not

►



The A2620 design is flawless

Testing, testing

THE public domain benchmark SI, written by Badger Software, claims that both the CSA 68020 and Commodore's 68020 run at 4.5 to 4.8 times the speed of a standard Amiga. It also claims that equates to 15 times the speed of an IBM PC, though I'd argue how it worked that one out. My guess is more, say 20 times. But we've all heard there's lies, damned lies, and benchmarks.

I tried a few of my own kludged together benchmarks. Like putting individual 68000 instructions in a tight loop and seeing their relative performance compared to a normal Amiga. In most cases, my tests proved the figure of four to five times the speedup.

With real world programs like assemblers and compilers the difference is staggering. Ignoring the unchanged disc performance, most programs show a three or four times speed improvement overall. Even programs that run solely from chip memory like StarGlider-2 show significant improvements, although only about two or three fold.

Compared to cheaper speedup boards, like the CMI Processor-Accelerator, this thing really flies.

But then, you get what you pay for. After all, the Processor Accelerator is a seventh of the price. Trouble is, for most programs, the Processor Accelerator only speeds them up 20 or 30 per cent, a tenth of the speedup gained from using a CBM A2620 card.

During my one-month testing of the CBM A2620 I found that most programs would run perfectly on it. Some self-booting games may suffer problems due to the Amiga running unexpectedly fast, causing timing loops to give incorrect values.

The people who issue these games will no doubt offer new, less timing-sensitive versions. While it's not hard to make sure a game runs on a 68020, before they were available it was hard to test if everything was OK.

The good thing about the Commodore card is that if you ever find a program that doesn't run on it, you simply do the five fingered salute – both mouse buttons, and the normal three fingered one – and you can then boot into a 68000, minus the 68020 and 32 bit ram.

THAT way, it is very effective in bridging the temporary compatibility gap with some games, though with business or productivity applications there should be no compatibility woes.

I had far more hassle trying to get a CMI Processor Accelerator to work with my system. It worked fine until I wanted to plug my hard disc back in, or any card on the bus. Friends who have bought newer CMI boards have not had these problems.

At the time of writing, Commodore had started shipping A2620 cards in small numbers to dealers and developers, meanwhile it is already selling a a pilot production run of the new Amiga A2500, which is really a repackaging job of an A2000, A2620 card with 2Mb of ram and a decent 40Mb hard disc. Sounds like a winner, especially in price per performance compared to a Mac II.

only cost three or four times as much, but lacks an MMU, making it ideal for Unix-haters but lousy for everyone else in the world. And seeing as how Commodore's Unix is apparently something fine to behold it would be short sighted to not have the chance of running Unix in a year or two's time.

Commodore's 32 bit ram is autoconfigured to reside in the system's 24 bit address range. What that means in layman's terms is that it will work with existing hardware devices like DMA hard disc controllers, and video boards.



CSA had the stupid idea of putting it's 32 bit ram out of the Amiga's accessible address range, with a series of trick ribbon cables running on top of the board.

It basically means you are limited as to what hardware works on a CSA-equipped Amiga, whereas Commodore's board ought to run everything. The A2620 design is flawless.

TODAY the A2620 may seem like an expensive luxury, but it points the way for Amigas of the future. Commodore has suffered before from having a lead in a market and then losing out to more advanced machines.

Chip costs mean that we won't see 68020-based A500s for a long while. But when it comes, the upgrade will be simple. Then there will be room for the next power-users card – a 33Mhz 68030, which I understand is already at the prototype stage.

REPORT CARD

A2620
Commodore 0628 770088
£1615

USEFULNESS
Complete compatibility with existing programs and the ability to speed every job make this very desirable.

EASE OF USE
Plug in and go. Only works in an A2000 because it needs a slot.

SOFTWARE
Will speed up anything which uses 1.3 libraries. Running Unix it is a serious rival to many more expensive systems.

SPEED
Increases the performance of an Amiga nearly fivefold with few problems.

VALUE
The A2620 is cheap compared to a Mac II but a system will set you back at least £5,000.

OVERALL *88%*

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November 1988 issue

Comicsetter make DTP fun for all while AmigaTex does a better job than anything the PC has ever seen.ARexx and WShell, two programs from the world of the mini and mainframe which make the most of the Amiga's multi-tasking environment.Plus a selection of truly authoritative game reviews.

December 1988 issue

How the Amiga came to be. Discover the pitfalls of learning C. No- punches pulled reviews of Microfiche Filer – a new way to look at databases; Cygnus Ed – the best screen editor available; Digicalc – a cut-down spreadsheet at a budget price and the latest 3d graphics tools. A host of games reviews including Legend of the Sword, Bermuda project and Rocket Ranger. Full techie tips on IFF. Interviews with the top games makers: The Bitmap Bros and Origin.

January 1989 issue

Beebulator! World exclusive review of the program which can turn any Amiga into a BBC micro. Protext preview – a British WP to beat anything from the USA. What has 24 pins and looks good on paper? It's the Citizen HQP-40 colour printer? Home accounts – tales from the valleys? No a package to balance books. Midi Magic sounds great, the Supra hard drive isd great but costs. Plus some great tips and games reviews.

February 1989 issue

Shoot-em-up construction kit, new series' on Basic and Machine Code. Digita's mailshot takes the pain out of postage. Datel sampler sounds off, but a magic box will make the Amiga sound much better. E-type –the typewriter emulator – filed under WPB. A cheap but great modem from Amstrad. K-Gadget – programmers friend or fiend. Best Amiga toy yet – the Microtext teletext adaptor. Plus an ace selection of games reviews and tips from the regular team abetted by Max the Hacks.

TO ORDER PLEASE USE THE FORM ON PAGE 97

Pretty in print

Steve Rackley finds Electronic Arts' print program a handy tool but painfully slow at output

AFTER playing Starflight on the PC I was biased against Electronic Arts, but its other offerings seem to be considerably better. Deluxe Print II is no exception.

Deluxe Print II, DPrint for short, isn't copy-protected, which is a point in its favour – presumably EA decided that since you really need its fairly sizeable manual to use it properly it could dispense with the horrid little coded wheel that taints Starflight and Interceptor.

So what is it, and what can it do? Well, it's a good program, but not good enough to warrant a six-page review. My rough draft of this review covered the Sign format in reasonable detail, and gave brief details of the other formats. It ended up being much too long. That's not so surprising, I suppose, as the manual consists of 90-odd pages of information.

DPrint II is to signs, posters, labels and other illustrated text what DPaint II is to computer art – a flexible and versatile aid for those who have a need for such things. It comes on a Workbench boot disc with a complete environment, as is fairly common with the more professional Amiga offerings – a Workbench in horrible shades of blue on a black background, Preferences (to let you change the colours to something a bit less funereal), the usual Workbench Command and System directories (sorry, drawers), and the CLI, as well as the program itself and the rather important Fonts.

On the Art disc is a fair selection of pictures in various directories – more about artwork later.

The default format on startup is the Sign, so let's start there. The program doesn't load any fonts automatically, so before entering any text you have to do this – I don't quite see why, as further loading is necessary each time you select a new font. Presumably the Load Fonts option just makes sure they're available – pity it doesn't do so when it starts up. Selecting fonts, and all other major options, is done from a standard menu bar at the top of the screen.

A Sign can be up to one full print page, which is 8.5 by 11 inches for a standard printer. Incidentally, it's a great pity that Commodore doesn't recognise the existence of IBM – most printers have an IBM emulation mode, but I was forced to use Epson mode on my Fujitsu, which doesn't give quite as good resolution as IBM graphics or Proprinter modes.

Anyway, that Sign. It can have a variety of border patterns picked from a selection on the Art disc, or a plain border in a variety of colours. You can also use an icon as a border, or design your own. The background can be plain, or you can load a



backdrop picture, again using supplied examples, or from a suitable IFF paint package.

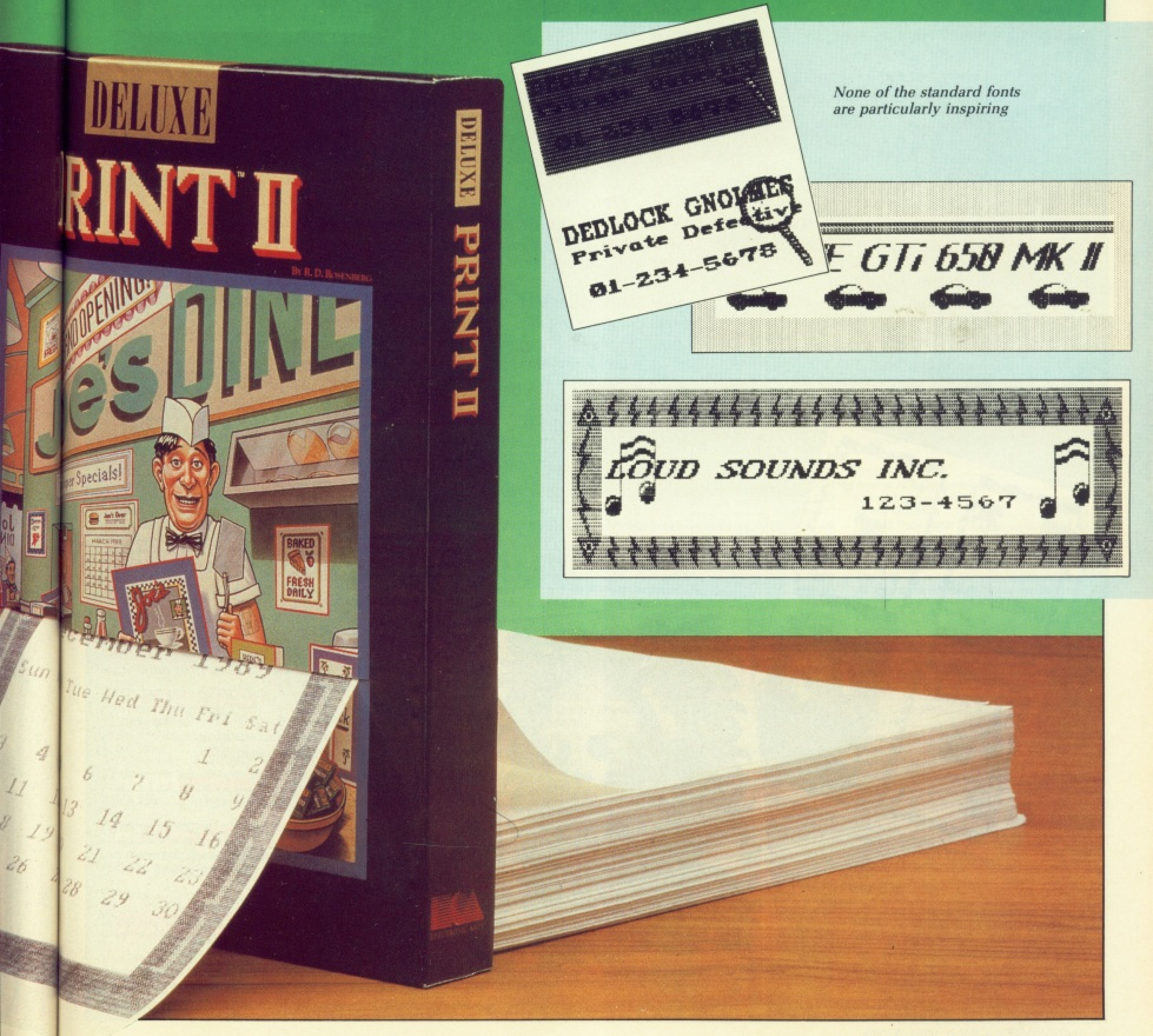
Text is added by selecting a font and size and typing one line at a time in the space provided below the main Sign, and smaller piccies (icons) can also be added – load them from the Art disc, edit them, and/or create your own.

All these selections are made from a number of buttons, which vary according to what you're up to, with some extra options, such as font types/sizes, being selected from the menu bar.

One of the best features of this program is the way you can simply and quickly undo or change just about anything you've done. Anything can be removed or moved around, icons can be flipped horizontally or vertically, and text can be resized using a rubberband box, which means you aren't limited to the given font sizes. It can also be re-coloured by selecting a new colour and clicking on the line you want changed.

When your masterpiece is finished, save it to disc and select Print. You're then able to specify the print size, up to the maximum of a full page, and proportions if you wish – you can either specify horizontal and vertical sizes, or just enter the width and select Proportional. The image can be output turned sideways.

My first big gripe comes here; printing a large Sign is slow. It takes around 11 minutes to output a full page – I know the program must be doing an awful lot of work converting ▶



None of the standard fonts are particularly inspiring

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the small screen image to the requested size and layout, but I'm sure it could benefit from some optimisation somewhere.

Other available formats are the Label – roughly 4 by 2 inches, with no border, the Banner – a double-size sideways Sign which can be up to 8.5 by 22 inches, the Letterhead, which fills the upper third of a standard page, and a couple of others which deserve a bit more of a mention.

The Banner prints even more slowly than the Sign, presumably because there's more work to do in enlarging it and turning it sideways – I didn't time a full-sized Banner because I went off and left it printing, but after checking the first quarter page I estimated a total time of more than 30 minutes.

The Calendar is a nice one – pick your month and year and the program fills in about three-quarters of the screen with a pre-formatted calendar, leaving the top for pictures, from your own or supplied icons, as usual. The screen display is hardly readable – which goes for all instances of small font sizes – but it prints OK.

There's no option to box or circle a date (holidays or whatever), but it's easily done by creating a suitably shaped icon and placing it over the date you want to mark.

The Greetings Card is another novel idea. It prints four panels on a single page with two of them upside-down so that the whole page can be folded into a card. It's basically the same as the Sign format, except that you actually create four "signs", selecting which of the four panels each one is to occupy.

Finally, the four tile Sign is a cross between the normal sign and the greetings card. This one gives you four panels to the page again, but all the same way up.

Final opinions then. It could get very tedious using this program on a single-drive Amiga, although I suppose you could reduce the number of files on the Art disc and remove some of the programs from the Boot disk (CLI and its associated command programs maybe) and combine the two.

Also, as I've said, the printing is awfully slow, but that should be less important in normal use, where you can go away and leave it. When trying to run through all the options for this review it was quite a pain.

The print quality could be considerably improved if some kind of smoothing was done when text is enlarged – it gets a very ragged, building-bricks appearance, as do lines and curves which looked quite good on the screen.



Ah! My birthday is on a Thursday

It's a pretty good offering if you have a regular need for this kind of program, but I wouldn't take some of the hype too seriously. As the manual puts it: "Until today, you had to go to a high-priced printshop for business cards", and "Until today, you had to wait days for letterhead stationery".

Well, I still would, but for eye-catching signs and posters on the club notice board, as well as labels and stickers, it does an adequate job.



The greetings card mode is clever

Designed for black belts in Origami

REPORT CARD

Product Deluxe Print
Supplier Electronic Arts
Price £49.95.

USEFULNESS
Stick to print shops for letterheads.

EASE OF USE
Needs a fair bit of reference to the manual, but it's a complex program.

INTUITION
Almost excellent – pity Print locks out everything else, but multi-tasked printing would be even slower.

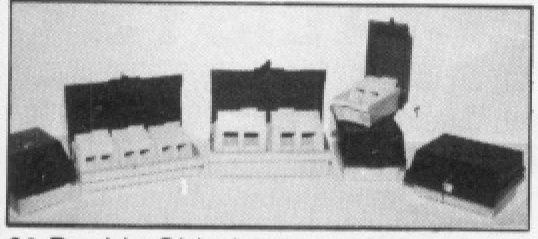
SPEED
Fast on-screen, horribly slow printing.

VALUE
Like paint programs, it's an expensive toy, but a fair price if you're going to use it regularly.

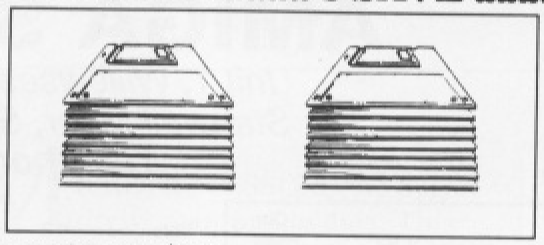
OVERALL 67%

Not in the same league of essential purchase as Deluxe Paint, but a handy tool all the same.

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Machine code magic

Granny has sent Rupert Goodwins down to Woolies to count the mix and match.

MICROPROCESSORS, he began dryly, manipulate data. This data can be anything from the cost of bananas to a picture of a fulmingturve, but it all gets stored in memory. The processor has to get at the data before it can do anything, and put it back again afterwards so that it can go on to do something else.

With only eight data registers in the processor (remember?), and at least 524,288 bytes of data to play with in an A500, the programmer is back at Woolie's mix'n'match sweet counter. All those sweets, and only one mouth. Cue the MOVE instruction.

It gets some data from memory, and MOVEs it into the processor's registers. Then when the data has been sucked and tested for sweetness, it MOVEs it back again. So you were the one that left the sticky pear drops...

The format of the MOVE instruction is:

```
MOVE [followed by .L, .W
or .B] source, destination
```

Square brackets [like this] will be used whenever there's a choice of things to type in, and shouldn't actually be used during programming. So a MOVE instruction in reality would look like this:

```
MOVE.L (A3),D4
```

The L, W or B following the MOVE tells the processor how much data to move. B is byte, or eight bits – a number between 0 and 255. W is a word, two bytes, which is a number between 0 and 65535, L is short for long word – two words, a number between 0 and four thousand million. This is also 32 bits, which is the size of the registers in the processor, or roughly the number of people



in the world.

If you use the .L option, all the bits in a register will be set according to the value you pass. If you use .W, the top word in the register will remain untouched, and if you use .B, three-quarters of the register are spared.

It's as if you've got to record a single on to a 20-minute tape – if you recorded it with the .L option, you'd record 15 minutes of silence after the music finished, the .W would just add five minutes of quietness and leave the rest of the tape untouched and the .B would be just right. But if you wanted to record the extended scratch dub mix, which lasted all 20 minutes, then you'd have to use the .L option.

The A3 and the D4 are an address and a data register. The brackets around the A3 tell the processor to look at the memory address pointed to by A3 and load the data in that memory address into D4. This is called indirection – if the brackets weren't there, the processor would just take the value of A3 and move it.

Imagine, if you will, that the sweet counter at Woolies has 10 trays. Your grandmother has written down on a scrap of paper a number of a tray, and she wants to know how many sweets are in it.

YOU have to humour grandmothers – it says so in the contract. So you look at the paper – it has inscribed on it, in elegant copperplate, the number 4 – and you naturally go to tray 4 and count the sweeties therein; 17. That's indirection – you get the number 17 indirectly by looking at the number 4 first.

The processor has many different ways of using MOVE, far more than at first seem necessary. But all are useful in the right circumstances. To get the number 4 on to the sheet of paper in the first place, your grandmother would have had to have used something like:

```
MOVE.L #4,A0
```

The # symbol – pronounced 'hash' – is 68000 shorthand for: *This is a number not an address*, so that instruction would move 4 into the A0 register. There's a special shortcut for data registers called MOVEQ for Move Quick. This takes a number ▶



between 0 and 7 and puts it into a data register without messing about with length options.

Just moving a number this small might seem strange, especially when the registers can hold numbers of many thousand million, but much computer time is spent fidding with tiny numbers, and the provision of this shortcut is much appreciated. So:

```
MOVEQ #4,D0
```

would move the number 4 into data register D0. But, of course, to get the number of sweets in tray 4, MOVE.L #4, A0 followed by MOVE.L (A0),D0 would be needed.

Other things you can do with MOVE – and, indeed, with other instructions that will shortly become apparent – include post-increment and pre-decrement, which look like (A0)+ and –(A0) respectively.

The first tells the processor to look at the information in A0 as before, but immediately afterwards increase the value of A0. This is useful if you want to do things with a range of memory addresses, as A0 is immediately ready to look at the next thing without any extra work needed.

Pre-decrement works in the opposite way – before the processor looks at the memory it takes one away from the address pointer. Use one to go up memory, the other to go down. If you bung in a .W or .L as well, as in MOVE.L (A0)+,D0, the processor will add the right amount each time – just enough to point to the next long or short word.

Another trick is to add something to the address register just for the time it takes to carry out the instruction. 54(A0) looks at the memory address 54 bytes after that pointed to by A0 but – and this is the good bit – without adding 54 to the register permanently. You know that the price of kumquats is 54 bytes after the price of zumzum fruit in memory? Then:

```
MOVE.B (A0),D0
MOVE.B 54(A0),D1
```

will get zumzums into D0 and

Machine code magic

```
; this line only needed for Devpak

        opt  l-,c+,d+

; this tells the computer where to find some common information

        incdir ":include/"
        include exec/exec_lib.i
        include libraries/dos_lib.i
        include libraries/dos.i

; program starts here

start   move.l #dosname,a1
        moveq  #0,d0
        CALLEXEC OpenLibrary
        tst.l  d0
        beq    quit_fast

        move.l d0,_DOSBase

        CALLDOS Output

        move.l d0,d4
        move.l d4,d1
        move.l #string,d2         get start of string
        moveq  #stringlen,d3      get length of string
        moveq  #3,d4              get number of kumquats
        move.l #fruit,a2          get position of kumquat count

; Kumquat fiddling starts here

        moveq  #2,d5
        mulu   d5,d4

; No more kumquats

        CALLDOS Write

        move.l _Dosbase,al
        CALLEXEC Closelibrary

quit_fast
        rst

_DOSBase   dc.l 0

string     dc.b 'Hello, World. You have'
fruit      dc.b '0 kumquats',10
stringlen  equ *-string

dosname    DOSNAME

           even
```

CALLDOS is a way to call Amigados, the program that normally runs in the machine and hooks everything together. CALLDOS Write, for example, tells the computer to take some data, in this case the message about those kumquats, and write it out to disc, printer or in this case the screen. CALLEXEC is used in a similar fashion to find out things about the system.

NOTE the little bits of English scattered about the program. These comments mean nothing to the computer, which ignores them, but are purely there to remind the programmer what is going on.

It is often necessary to do something complicated, and it's a good idea to leave enough informtion around to remind yourself in six months time, when the program has left your mind, just what it was you were up to.

THE area of memory which holds the number of the fruit is also used for holding the message the computer prints. This shows the use of labels, words or short phrases used to tag points in memory.

By using a label instead of a real number, the code is made easier to read and modify. If you later add stuff between the points where the program is and where the data sits, you won't have to work out exactly where to point your address registers again. The computer will do it for you, which is, after all, what it is here for.

BETWEEN the two comments "Kumquat fiddling starts here" and "No more kumquats" you can insert whatever instructions you like to play with the number of kumquats, set up in D4 to start out as 3, and the computer will display your fruity numerics.

For now, there are a couple of instructions that are used to multiply the original number by two to produce six of the things. Beware, the simple way of displaying the number will only cope with between 0 and 9 fruit, although the smarter reader, like you, will be able to work out a way to print more than one number.

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◀ kumquats into D1 without having to do anything to A0 in between. Not brain-numbing enough? Well, addresses like (A0.D4.W) are quite legal – if you can't guess, this adds a word of D4 to A0 and uses that to look at memory. What would (A0.D4.B) do? Same, but just adding a byte of D4 to A0.

And, remember, the 68000 processor doesn't mind what goes where. So MOVE.B D1,54(A0) would move the contents of the bottom byte D1 into the memory location 54 bytes after that pointed to by A0; and there's no reason why something like MOVE.W 54(A0,D1.L),(A5)+ can't be used. You just have to think of a reason why...

But merely moving stuff about is boring. So it will come as a great relief to find out that it is also possible to add things together, subtract them or even multiply them. Simply replace the MOVE instruction with ADD or SUB, and it will come to pass. There is a slight added restriction – when using maths functions, either the source or the destination has to be a data register. So ADD.L (A0)+, D4 will work, as will SUB.W D1,55(A5), but SUB.W (A0),(A1) won't.

In all cases the number specified in the source is added to or subtracted from that in the destination, and the result stashed in the destination. For example:

```
MOVEQ #5,D0
ADD.B (A0),D0
```

would end up with whatever was in the memory location pointed to by A0 being stored in D0 with five added to it.

AGAIN, some shortcuts are provided which let you use the processor more efficiently. There's an ADDQ, which adds between 0 and 7 to a destination, and an ADDI, or Add Immediate, which adds larger numbers quickly. ADD itself is best left for register-register additions.

Multiply is a different kettle of hippopotami. Instead of the logical MUL instruction – people who write assemblers hate words with more than five letters, and try not to use them – there are two, MULS and MULU. These mean multiply signed and unsigned respectively; MULU has the distinction of being the most beautiful 68000 instruction, as there is a chain of underwater caves in the Pacific by the same name.

MULS and MULU also only work on word length data; MULU multiplies one word by another and leaves the result as a longword in the destination, and MULS does the same, but if the data is bigger than 32767 in either the source or the destination the processor assumes it is negative. You'll be amazed the number of times you don't use multiply.

Now for that tricky first program. Most commercial assemblers, and quite a few shareware efforts too, come with something known the world over as the Demo Program. Called demo.asm or demo.s according to the package's foibles, it contains a few short lines which with the minimum of fuss contrive to display *Hello, world* on the screen.

This one is no exception – the example is modified from demo.s in the Hisoft Devpac Amiga package, which is, in any case, recommended as the paid-up code hacker's assembler of choice.

COMPUTER animation is traditionally broken into three stages – modelling, animation and rendering – which form the technical side of what is essentially a creative process.

Modelling is the creation of the objects for the animation. The colour and other surface features, such as shinyness, can be defined as well as the shape of the object. This is done with programs, also known as software tools, that offer the same features as 3D CAD packages.

On the Amiga examples are Modeller-3D, 3-Demon and the modelling aspect of Sculpt-3D.

It is quite possible to design objects from the ground up using one of these packages. Other possibilities are to take and modify objects from libraries or to generate them from programs or digitisers.

If, for example, you wanted to animate a talking bust the sort of objects created would be the head, a separate jaw, eyebrows and eyes, a backdrop, the torso and arms. These would just be individual objects, with no relation to each other. The tools being used may allow the use of objects that incorporate IFF pictures from DigiView or Deluxe Paint. Both Turbo-Silver and Forms-in-Flight 2 allow pictures to be mapped on to 3D objects.

Given this unrelated assortment of objects, the process of defining how they move in relation to each other over time is called animation. Modelling and animation are not completely separate as the design of the objects has to take into account what sort of animation is available.

A wide range of animation methods are available. Animate-3D provides two – fixed objects being moved along paths in space, and interpolation between key frames. The camera is usually animated in a similar fashion to objects, for example being moved along a path. Some packages, including Animate-3D and Videoscape V2.0, allow hierarchical motion. The rotation of a car wheel can be specified in relation to the moving car.

The animation forms a complete description of how our little universe behaves, along with a description of where the world will be viewed from. The computer may know all this, and be quietly enjoying our creation, however we still can't *see* anything. The conversion of this information into a series of pictures comprising the final movie is the process of rendering.

There are many techniques for rendering, offering a different visual feel and different performance advantages. At the high end of the range is ray tracing. This takes a long time to produce very realistic scenes. At the bottom end lies wire frame, visually unappealing, but very fast.

The different rendering techniques are often the most talked about part of animation, yet they are only a part of the whole process, and usually a fairly automated one at that.

HAVING covered these three stages of animation, is there anything left? Yes, the part that is the most difficult, and that the computer will be of very little use for. This is the process of working out a story, what objects will be used in the story, and how they will be animated. Only after this has been worked out can we switch on the Amiga.

The classic way of describing a ►

Let's make movies

Sam Littlewood begins a series showing how to create an animation using commercially available tools. This will stretch both your artistic and technical abilities



◄

story is through the use of a storyboard – a sequence of cartoon style sketches of important points in the animation along with annotations describing the detail of the events and the elements that the picture does not convey, such as the lighting and timing.

Storyboards are like notes, they should be enough to record the idea you had. If you have a strong visual memory and are working alone, then a couple of sketches on the back of an envelope may suffice. More rigour and detail can be added as necessary, but it should not get in the way of having ideas.

Using a 512k Amiga and playing an animation out of memory, two seconds is about the limit for an animation. If there is very little change between frames, that figure might be pushed up to three or four seconds. Using more memory, for example 2Mb, it could increase to around 10 seconds.

The amount of memory occupied by an animation is highly dependant upon the change between frames, the type of rendering and the method used to pack the frames into memory. If a single-frame video recorder is available the length of the animation becomes limited by your patience.

GIVEN these time limitiations, the story being told should be incredibly simple, described in maybe two or three sentences. It is the visual equivalent of a verbal one-liner. It is far easier to embellish a story than to try and reduce a complicated one without destroying the point. A good source of information on how to use time and ideas for stories is existing animations, both computer generated and hand drawn, and TV ads.

When exploring ideas for animations it is always important to keep the limitiations of the tools that will be used in mind. For example, Videoscape V1.0 did not allow hierarchical motion. Any animation that required an object moving relative to another moving object would be difficult.

Similarily, are you going to be able to model the objects you have visualised? Natural objects, such as bits of humans, can be difficult to model realistically – it may be worth stylising the object into something that is easier to model.

BULL MAKES THE POINT

THE story that will be used for the rest of this series is something inspired by the recent American election.

The scene opens with the camera looking from the back of an auditorium across an audience at a speaker on the platform.

The camera moves down across the audience to get a close up of the speaker, who is rythmically pounding out some party line.

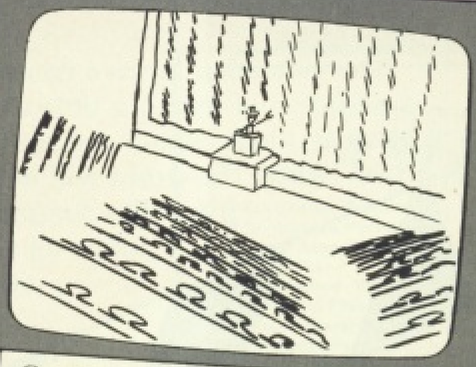
The camera moves away, through the curtain behind the speaker to backstage where it finds and moves towards a bull with its back to the curtain quietly eating.

The hindquarters of the animal are oriented in the direction of the speaker and shrouded, leaving any connection between the two to the imagination of the viewer.

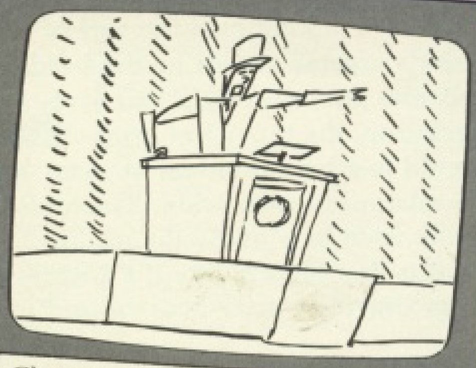
The total running time will be approximately seven or eight seconds.

If more is required, then some embellishments can be added, such as a detour past one of the members of the audience, or a tour through backstage paraphenalia before coming upon the animal.

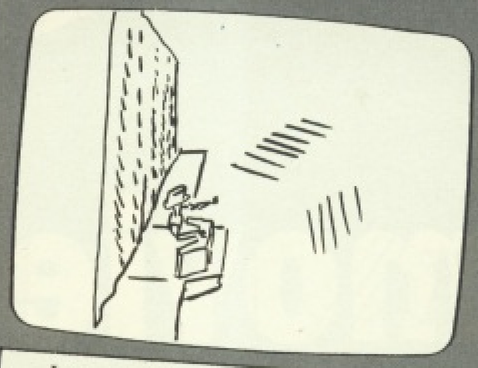
The pictures below show an initial storyboard for this animation.



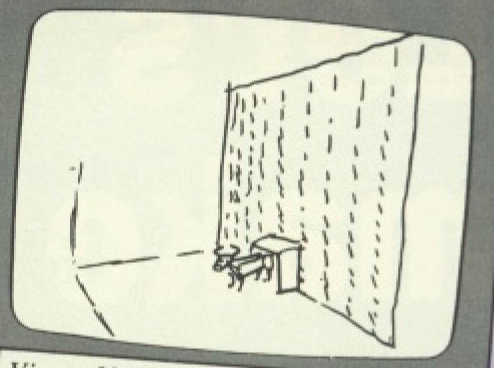
Camera moves in towards podium in about three seconds



Close up of speaker talking. Camera pulls back up and left



Long shot of speaker. Camera moves behind curtain



View of bull with rear end covered. Camera zooms in for about two secs



Close up of bull's head. Needs ring through nose

● Next month, we will look at using the commercial modelling tools available to describe the objects needed to build this animation.

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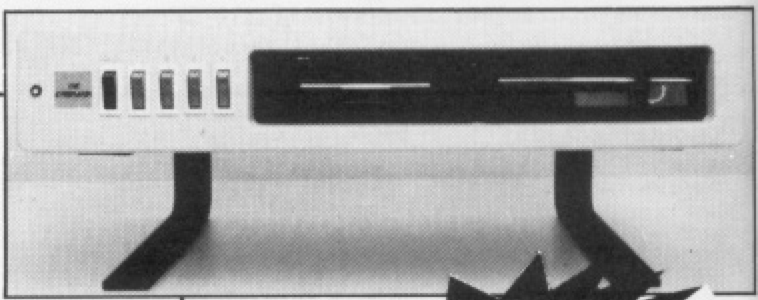
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Looking for a picture

Julie Simpson's IFF search utility sorts Picassos from the programs

```
/* ------------------------------------------------------------------------ */
/*      An IFF Picture File Search Utility - by Julie Simpson (1989)       */
/* ------------------------------------------------------------------------ */

#define MakeID(a,b,c,d) ( (LONG)(a)<<24L|(LONG)(b)<<16L|(LONG)(c)<<8|(d) )
#define ILBM MakeID('I','L','B','M')

#define  FIB_SIZE              (LONG)(sizeof(struct FileInfoBlock))
#define  BUFFERSIZE            12
#include <exec/types.h>
#include <libraries/dos.h>
#include <libraries/dosextens.h>
#include <exec/memory.h>
LONG *global_buffer_p, *global_ILBM_p;
main()
{
void FileSearch();
char input_name[300];
global_buffer_p=(LONG *)AllocMem(BUFFERSIZE,MEMF_PUBLIC);
global_ILBM_p=global_buffer_p+2;
printf("ILBM Search  - by Julie Simpson\nEnter Device:path/filename ? ");
scanf("%s",input_name); printf("...searching\n");
FileSearch(input_name);
FreeMem(global_buffer_p,BUFFERSIZE);
exit(TRUE);
}
/* ------------------------------------------------------------------------ */
void FileSearch(filename)
char filename[];
{
char   name[300];
struct FileLock *CurrentLock_p,*Lock();
struct FileInfoBlock *FIB_p;
BOOL   FileCheck();
if(CurrentLock_p=Lock(filename,ACCESS_READ))
        {
         if (FIB_p=(struct FileInfoBlock *)AllocMem(FIB_SIZE,MEMF_PUBLIC))
              {
                if(Examine(CurrentLock_p,FIB_p))
                    {
                    if (FIB_p->fib_DirEntryType<0)
                       {FileCheck(filename);}
                       else { /* Non-Unique Reference found */
                             while(ExNext(CurrentLock_p,FIB_p))
                                {
                                strcpy(name,filename); /* copy the name */
                                if(name[strlen(name)-1]!=':'){strcat(name,"/");}
                                strcat(name,FIB_p->fib_FileName);
                                if(FIB_p->fib_DirEntryType<0)
                                  {FileCheck(name);}
                                  else {FileSearch(name);}
                                }
                             }
                     FreeMem(FIB_p,FIB_SIZE);
                    }
              }
         UnLock(CurrentLock_p);
        }
}
/* ------------------------------------------------------------------------ */
BOOL FileCheck(filename)
char filename[];
{
struct FileHandle *fh,*Open(); BOOL error_flag=FALSE; LONG length;
if (fh=Open(filename, MODE_OLDFILE))
              {
               length=Read(fh,global_buffer_p,BUFFERSIZE);
               if(length!=BUFFERSIZE){error_flag=TRUE;}

                 else { /* check for ILBM */
                        if(*(global_ILBM_p)==ILBM)
                           {printf("%s \n",filename);}
                      }
              Close(fh);
              }
         else {error_flag=TRUE;}
return(error_flag);
}
/* ------------------------------------------------------------------------*/
```

THERE are plenty of utilities around for diplaying IFF pictures, but attempting to display all the files on a particular disc, because you don't know which files are picture files, takes up more time than is reasonable – particularly when the files are scattered in different drawers.

I became fed up with this and wrote a small CLI based utility program that checks every file on a disc and lists all the IFF pictures.

Type the program's name at the CLI and it will ask you to enter the device/path/filename combination. If you are checking a whole disc enter the device name. This is dead useful on a hard drive.

I wrote the program in C. It is an interesting example of how recursion can be used to trim a routine to the minimum. An average disc can be searched in about 40 seconds.

DRAGON'S LAIR

Ciaran Brennan risks all for the love of Princess Daphne



THOSE of us who misspent the best part of the early eighties in our local arcade will have fond memories of Don Bluth's Dragon's Lair, the most spectacular laser disc driven coin-op ever to hit these shores. The gameplay wasn't up to much, but it was worth your while just to see the Disneyesque cartoon plot unfold.

An 8 bit interpretation of the concept followed in 1985, courtesy of Software Projects, but it has taken until now for a more accurate conversion to appear – thanks to Canadian company Readysoft, which has managed to harness the massive power of everybody's favourite 16 bit machine – albeit across six discs.

The plot follows the fortunes of a brave knight, Dirk the Daring, as he attempts to rescue his lady love, Princess Daphne, from the evil dragon Singe. Five joystick or keyboard driven moves (left, right, up, down and fire) guide the brave swain through a series of movements which are fluid and entertaining, if a little limited.

THE effect on gameplay is highlighted in one scene where Dirk is steered through a full 10 seconds of animation, including examining the decor, killing one of the dragon's henchbeasts and escaping from the room – all by a single press of the fire button. The necessary movements never vary, so that the game ends up as nothing more than the learning of a strict sequence of key presses.

Hardened Dragon's Lair fans may be put off by the fact that this version also fails as an accurate conversion of the original coin-op, including only a fraction of the original's many scenes. For instance, where are the bouncing skulls, or the ghostly horsemen? Lack of memory is hardly an argument in this case – after all, is there any real difference between six discs and eight? Perhaps so. The original game offered 800 decision points or nodes. Emulating this in ram would take megabytes.

The game must always be resumed from the very first disc when your three lives have run out. This becomes especially annoying at the later stages where the puzzles become slightly more difficult and the necessity of having to play through the by-now pedestrian first levels is nothing more than a chore.

Hard disc users won't face this

DRAGON'S HISTORY

CINEMATRONICS is usually credited with bringing the world's first laser disc game to the arcades. But the company was only a marketing front. The real work was done by South Californian Starcom under the auspices of ex-Disney animator Don Bluth.

After six years of coding and drawing Dragon's Lair was launched at the Chicago arcade show in the spring of 1983. For a game which was started in 1977, it is remarkably modern. Now it is ready to take on the Amiga.



The bridge . . . you won't kill the moat monster

problem, but only the rare Comspec hard drives are catered for. The program accesses the hardware directly, so the programmers contacted all the hard disc manufacturers for the details they needed to write drivers. Only Comspec came up with the goods so only Comspec products are supported.

Since no one sells suitable drives in the UK it is unlikely that anyone will use this feature. I know that I would not be prepared to devote five megabytes of disc space to one game, even if it did work.



The black knight at the end of the electrified floor

It is difficult to know who this product is going to appeal to. The necessity for lots of memory is the first restriction while the £145 price tag puts it out of reach of quite a few budgets. The real pity though, is that it has limited appeal. In the arcades when you are only shelling out a couple of quid and only playing the game for a few minutes a game like this works. At home where you want to play for many hours the appeal starts to pall.

As a demo it succeeds in showing us what we already know – the Amiga is really capable of great things. Hopefully it will inspire budding programmers to animated heights that they never dreamed possible.

I enjoyed playing it at first, but tired when I had mastered all the moves. Dragon's Lair is a program your best friend should buy. Go round to his house. Play it, enjoy it but save your money.

I may have tired of playing it now, but when you first enter a new room the thrill of seeing a load of new graphics, the fear of impending death and a very real feeling of involvement made the action electric.

If you pass it by you will be missing out, but in the long run the expense is hard to justify.

One day, when people begin to write games specifically for the Amiga we may yet see one which combines the breathtaking presentation of Dragon's Lair with the playability and invention of something like The Sentinel or Head Over Heels. I can't wait.

REPORT CARD

Dragon's Lair
ReadySoft
£44.95

SOUND
Sampled from the arcade game the audio effects are as atmospheric as the graphics but cut short to fit.

GRAPHICS
Star quality graphics make this shine as a demo, making up for the failings in other areas.

GAMEPLAY
Just memorising when to move in one of five directions is not going to challenge the intellect, but you'll keep going back to it.

VALUE
Ouch! Twice as much as most games, OK it comes on six discs, but that does not cut much ice when you have to shell out so much for just one game.

OVERALL 70%

It was a hit in the arcades, now it has made the grade at home. Readysoft is looking at converting other laser disc games. Don Bluth's Space Ace is being considered.



Avoid the lit squares



Fire, up, left, down, left, right, up



You only need one fire button press to complete this room



Princess Daphne – the aim of the game is to rescue her



Killing the black knight

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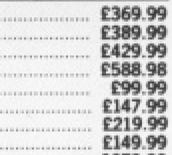
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JOAN OF ARC



Can you conquer Orleans and become the crowned ruler of France?

CORRUPTION and treachery among the French nobility is rampant. Punitive taxation is bitterly resented by the peasantry and the country is on the brink of rebellion.

The 15th century war between the French and English is reaching its climax. Plundering by the military of both sides is the order of the day and only a miracle can save France. That miracle is Charles Aznavour. Did I say Charles Aznavour? Sorry, I meant Joan of Arc.

The game has two distinct parts and objectives. At the start your main aim is to conquer Orleans and Rheims to become crowned ruler of France. In this section you are constrained to military combat.

Once your coronation is out of the way, you can assume royal powers. A broad range of options opens up as you endeavour to cleanse all of France from the English presence.

Diplomatic initiatives, obtaining the release of prisoners or towns in exchange for money, executions, pardons, espionage, kidnapping and murder are all possible to a monarch.

Play is centred around a map of France with which you can learn weather conditions, the status of leaders plus the types and numbers of troops in different parts of the country.

Using this data, and the map, you deploy forces to displace and attack the enemy, build fortresses and strengthen your bases.

Combat is arcade style. Scenes involve entering towns, attacking and defending besieged battlements with rocks and boiling oil, battling in open country with archers, troops, mortar and knights and man-to-man combat on horseback.



Plan is centred around a map of France

When the opposing factions prepare to do battle in open country the archers, troops and knights are shown as dozens of almost microscopic sprites. At first sight this looks singularly unimpressive, but it works very well.

What with arrows and stones flying through the air, the various tiny troops surging forward and the frenzied cries and sounds of war, it really does give a feeling of viewing a battle from long distance.

A host of characters feature in the game. Once you accede, full details of each one are obtainable throughout. These characters include enemies as well as allies and can be selected and used in alliances or as spies to further your aims.

Games can be saved and loaded. Disc access slows the game down a little and a second drives helps.

Animated scenes are not the greatest you'll ever see, but the graphics are attractive and in keeping with the game's theme. The map and icons have an appropriate historic look about them, most of the information being presented on a parchment background.

Sound is used to splendid atmospheric effect, particularly on the battlefield. Game controls – mouse, joystick or keyboard – are responsive.

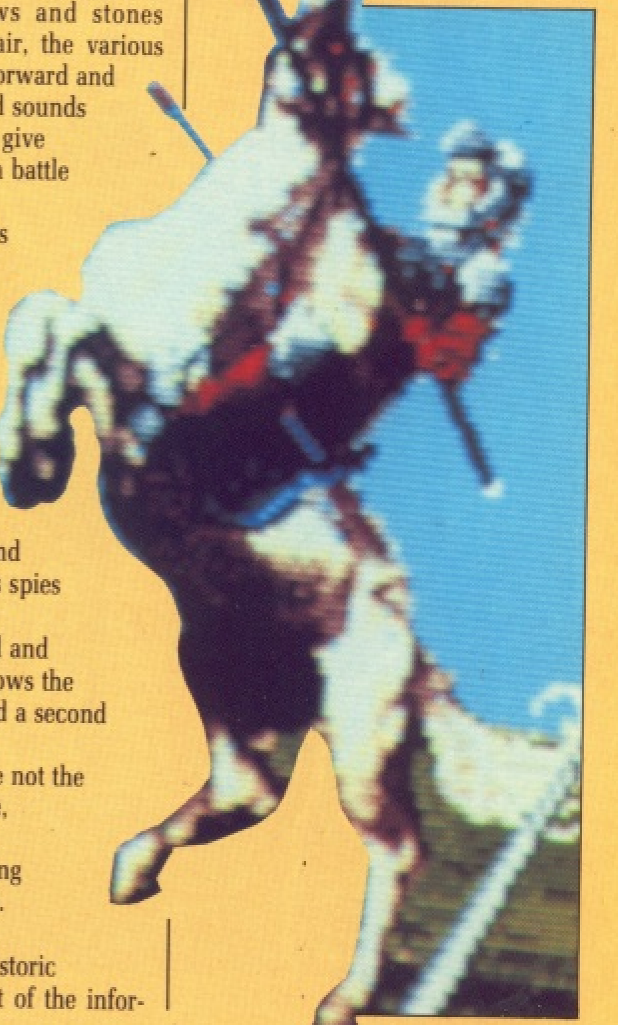
Joan of Arc is not the sort of game you will finish in a single sitting. The depth and detail, coupled with the generous range of choices, characters and decisions, mean that this is one you'll have to come back to.

Bob Chappell

Joan of Arc
£24.99
US Gold

Sound
Graphics
Gameplay
Value

Overall – 81%



20,000 LEAGUES UNDER THE SEA

THIS purports to be a graphics oriented adventure. The first graphics you have to tackle take the form of the game protection. You have to identify two colours from a supplied grid. Yuk. Then the game starts – digitised sound of the wind whistling as the credits roll. Promising.

Unfortunately from then on it's downhill all the way, beginning with the title page set against a hideous blue flashing background.

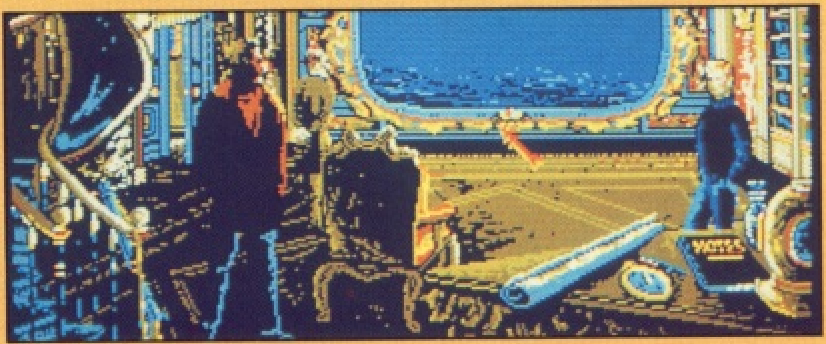
A newspaper page tells you that the good ship Abraham Lincoln is setting off in search of a deep sea monster. As the blurb indicates, the great French professor, Mr Aronnax, will be taking part in the expedition.

But before you can say Jaques Robinson, the ship is attacked and the bold searchers are incarcerated in Captain Nemo's famous underwater vessel, the Nautilus.

The aim of the game is to record your fantastic journey in a log so posterity can enjoy your exploits. What this actually means is that you spend most of the time exploring the few rooms on the Nautilus.

There's the control room, which houses the instruments and a periscope, the library – lots of books and an organ but nothing else of note – and the living room, which has a porthole, a map and more instruments.





There's precious little else to do except point at a few objects and decide how to manipulate them.

You could go underwater swimming. Or pop up on deck for fresh air when not submerged. Or perhaps even take a stroll on an island. Very boring – five windows of jungly vegetation and a small character who looks as if confinement on the Nautilus has made him stiff as an over-starched shirt.

Captain Nemo gets the huff with his visitors very easily, so they tend to spend a lot of the time locked up in their cabins. Never mind, there can always be another entry in the log: "An extremely interesting day".

And when the game ends prematurely with you having failed somewhere along the line, you'll get a black screen with a few immortal words to let you know it's all over. To rub salt in the wound, the program insists you go all through the copy protection routine again to restart.

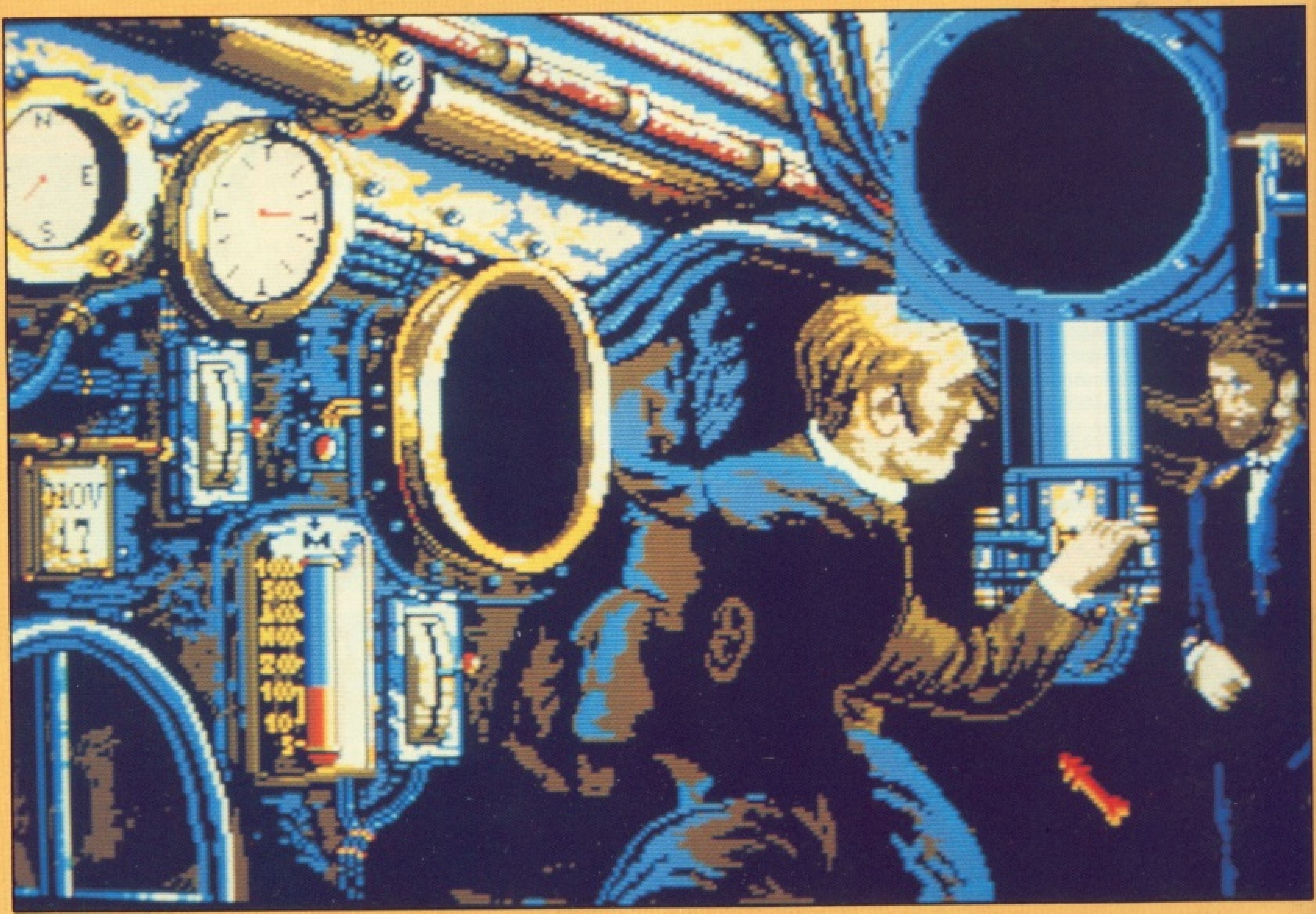
The graphics showing the control room and library are pretty good, capturing the right tone and feel of the Nautilus. But the text is pathetic, even allowing for translation, and the gameplay dire. Best place for this game is 20,000 leagues under the sea.

Bob Chappell

20,000 Leagues Under The Sea
£19.95
Coktel Vision/Active

Rating	
Sound	1/12
Graphics	2/12
Gameplay	1/12
Value	1/12

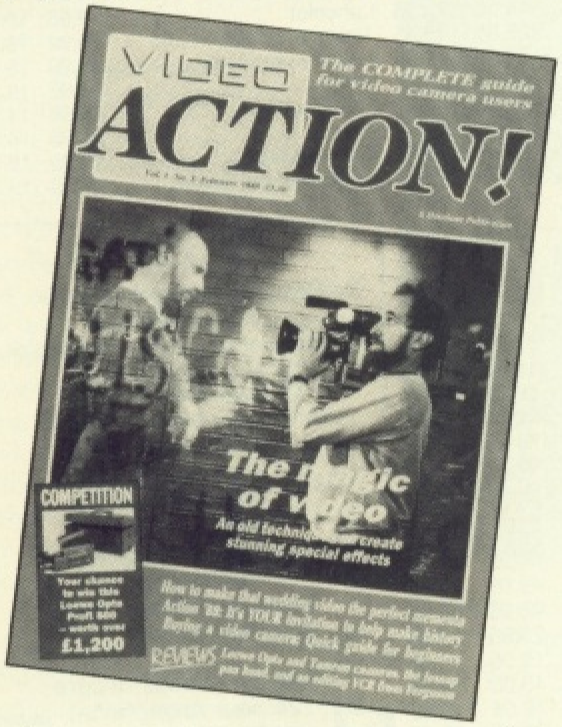
Overall – 15%



The control room – precious little to do except point at a few objects

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THE ARCHON COLLECTION

HERE we have a set of two related games, both of which have seen service on other home computers for quite a while. Archon was one of the first games to appear on the Amiga 1000, but early versions were not compatible with Kickstart 1.2.

Archon II has also been available for a while, but by making them both run on the A500 and 2000 EA has been able to introduce new Amiga owners to these fave raves.

Neither makes full use of the Amiga's abilities – although in 1985 Archon seemed stunning – and despite their being just a mite long in the tooth, they offer some of the best strategic entertainment you could hope to find.

Each disc contains a separate chess-cum-arcade game, played out over two types of screen – a strategy board and an open battlefield. Both offer similar screens, the main difference being a change in the significance of the board squares in Archon II.

The game concerns a struggle between the forces of light and darkness, either of which may be played by a human, the computer or a cyborg.

The cyborg option is a useful compromise between the other two – the human player controls the strategy board but lets the computer take over all action on the battle screen. Either side may be handicapped – the higher the handicap, the slower the movement and reloading of that player's pieces and missiles.

The pieces have different attributes and, depending on the type, may move along the ground, fly or teleport to another square. A unicorn, wizard and phoenix are some of the light side's pieces while a sorceress, basilisk and dragon make up part of the dark team.

Certain pieces have the ability to cast spells such as heal, shift time – affecting the current luminance of the squares – exchange places, revive, imprison and summon an elemental, which is a temporary attacking piece.

All can engage in combat, which normally takes place when a piece lands on a square occupied by the enemy. At this point the display switches to the battlefield where the pieces fight it out with whatever weapons their individual type decrees they may use – fireballs, rocks, lightning bolts, eviction notices...

Pieces are initially positioned chess-like at opposite sides of the board. Some squares have special properties. In Archon I a piece on a square of its own colour is far more powerful than when it is on a square of the opposite side's colour.

The luminance of colours ebbs and flows, but can be changed immediately by casting a shift time spell. Flashing power point squares offer faster healing and give protection against magic spells.



Each piece on the board has different attributes

In Archon II each side starts with four main teleporting pieces, adepts, which can conjure up a number of creatures to assist them. The strategy board is composed of four bands representing earth, air, fire and water, the same elements as the adepts. These squares act on the occupying piece in the same way as the luminosity of the squares in Archon I.

Both games are joystick-driven and response is first rate. The sprites and animation look a little old-fashioned – chunky and stiff – and the battle scenes are fairly basic by today's 16 bit standards. FX are similarly functional.

However, the wide variety of playing pieces, their characteristics and the combinations of moves available make Archon a game with all the strategic depth and breadth of chess.

Bob Chappell

The Archon Collection
£24.95
Electronic Arts

Sound
Graphics
Gameplay
Value

Overall – 73%

DEF CON 5

THE Strategic Defence Initiative forms the basis of this simulation, a game so dull that you begin to view the nuclear holocaust in a new, more favourable light.

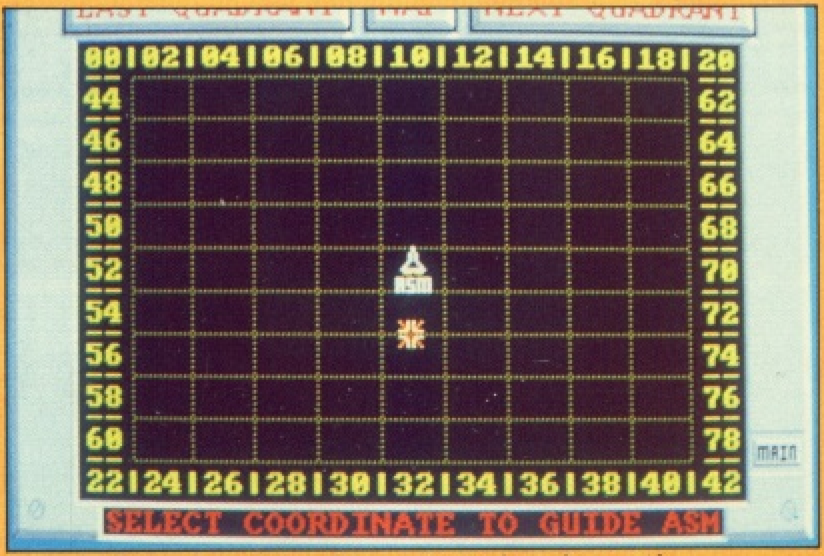
The 12 page manual sets out to provide you with background information. This it does with lashings of militarist jargon and mnemonics. Skip the first seven pages and begin with the English version on page eight.

Staring at a blank computer terminal you click on the PWR button. The device bursts into life. Silently. Everything happens silently in Def Con 5 – even nuclear explosions.

A single scrolling line across the bottom of the terminal prompts you what to do next. Your first move is to select which of the six available microwave transmission link stations you wish to control. It makes no difference which you choose.

Def Con 5 is played in four stages. The first involves foiling a sneaky spacemine attack by the Ruskies. Drifting slowly across a grid is a circle with the word mine written underneath. In a second square is a triangle labelled ASM.

By causing the two characters to collide you are treated to a close-up "live" video of the ASM and mine. Using an extendible claw you must remove the detonator cover, remove the detonator and replace the cover within 30 seconds.



By causing the two characters to collide you are treated to a close-up video

In level two a series of interceptors have been launched against your low orbit weapons. You must move the weapon under threat from side to side while a robotic MTI shoots down the enemy missiles.

Amid this melee of mass destruction I selected the weapon system designed for use in stage four and crashed the machine.

Steve Brook

Def Con 5
£24.95
Cosmi MicroProse

Sound
Graphics
Gameplay
Value

Overall – 29%

SPITTING IMAGE



FLUCK and Law come to the smaller screen intent on giving an irreverent chuckle to all their TV show fans. And offending just as many, too.

Here's the scene: Within the next seven years a world war will take place, one so great that even the Swiss will get involved. A war so terrible the Italians have already surrendered. One leader will emerge from this war. It is your task to stop him and save the world from a fate worse than ITV.

Wrapped up in a cute cover offering a free Barry Manilow – not supplied with review copy, thank goodness – the game is essentially a boxing-cum-karate-cum-Ninja Gerbil variant.

First you must – and I quote from the instructions – "select the leader you would like to rule even less than all the other leaders you wouldn't like to lead either". This is one set of instructions you'll want to read. They are short but hilarious.

Anyway, the leader in question is one you are about to beat up. Next you choose who will do the beating



up. Scores flash on to the screen at various times, but it's difficult to judge how well you're doing. Control is with a joystick. Victory is the best of five bouts.

There are six leaders – Gorbachev, Reagan, Thatcher, The Pope, President Botha and the Ayatollah. As well as being able to strike a blow at their opponent's head, body and feet, each leader has a special move. The Ayatollah's is a boxing glove which comes out of his hat. Botha's involves dropping something and slashing.



Each leader also has a sidekick who comes out to help when you press the zero key. Mrs T's sidekick is Dennis, who appears, throws a gin bottle at her opponent – listen for the sound of breaking glass – and then passes out. The Ayatollah's sidekick sends a burning burst of intestinal gas across the screen.

When you knock out one leader you choose another two, and so on until... well, that's the whole point of the game, so I can't reveal what happens.

The main screen, where you choose the protagonists, shows a globe of the world disguised as a bomb. Moving the crosshair over different parts of it reveals such tantalising items of information such as The Wet Bits (oceans), Fuzzywuzzyland (Africa) and Loadsamoneyland (USA). Spitting Image is not a game for the easily-offended. But then bad taste always sells well.

As a political satire, Spitting Image is superb. As a game, however, once you've chuckled your way through a few bouts it's bound to lose some of its appeal.

Ian Waugh



Spitting Image *£19.95* *Domark*	
Sound	
Graphics	
Gameplay	
Value	
Overall – 72%	



Time and magik

The trilogy

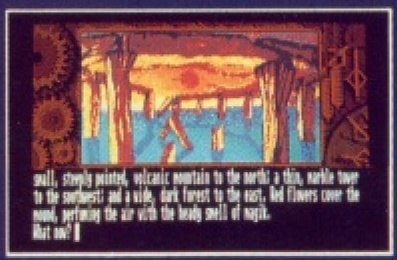


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Screen shots from Atari ST version

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SUPERMAN

THIS is not the man in blue's first computer outing. He was imprisoned in a C64 by First Star four years ago. But it is his first appearance on the Amiga, Tynesoft having licensed the rights from DC Comics and First Star.

Superman comes on two discs and is split into several sub games, each more perilous than the last. As the game loads, a very agreeable rendition of the Superman theme plays in stereo harmony.

A nice, if somewhat pointless addition to the game is a mini comic strip which describes the storyline of the current mission. The first of these sees Superman battling Darkseid's Parra demons, Space Harrier style.

Whether Superman selects heat vision or superstrength, you have to select the less than superhuman power of extreme patience to overcome the evil Parra demons. Once the first level has been completed the game becomes much more playable. As well as having to deal with Darkseid you must take on Lex Luthor, who has formed an alliance with Darkseid to destroy the earth.

Graphics are true to the comic, our hero being authentically recreated in pixels. Some of his flying is a shade rusty, but on the whole the game has been well implemented.

The music and FX are top notch, especially the high score table which shows Superman's home at the North Pole. Overall, though, it lacks that special something.

Chris Holmes

Superman
£24.95
Tynesoft

Sound
Graphics
Gameplay
Value

Overall – 62%



Graphics are true to the comic, our hero being authentically recreated in pixels



WARLOCK'S QUEST

DEEP in the boiling entrails of the earth dwell the infernal powers of darkness, ruled over by he whose name must never be pronounced. The Lord of Wrongdoing – oops – has stolen the Karna from mankind, the ultimate precious jewel granting infinite power to he who learns the secrets of its workings. Your task is to wrest it back.

In the steaming pits of the abyss, among grotesque demonic beasts and cruel traps, you must find eight objects that will lead you to the Karna.

Your character is a tiny wizard who jumps and leaps around the screen pointing his magic wand at the beasties and zapping them.

The bottom two-thirds of the screen contains two levels which you can flit between. The top third contains information about your well-being or lack of it.

There's a highest score and a current score, but no high score table. There is a pause, and you can use keyboard or a joystick. If you have 512k you are advised to disconnect your external drive.

Objects to collect include druid stones – less painful than the gall variety – and treasure chests. You can pick up a fire trident if you can swing on some creepers over a lake. There is also a bottle of life potion, but you'll never get this if you have arachnaphobia.

Some of the objects add to your score. A lot of good that does you when you're dead.

Your armour score rises if you pick up protective scarabs, but the instructions give no clues about what to collect or avoid. In fact the instructions are almost non-existent. Yep, it's another seat-of-your pants game.

The screen remains static, only scrolling when you reach the left or right edge. This moves you on a level, not to be confused with the two vertical levels. Seems to make little use of the Amiga's facilities, but the sampled FX are rather good.

Ian Waugh



The bottom two-thirds of the screen contains two levels which you can flip between

Warlock's Quest
£19.95
Ere Infogrames

Sound
Graphics
Gameplay
Value

Overall – 68%

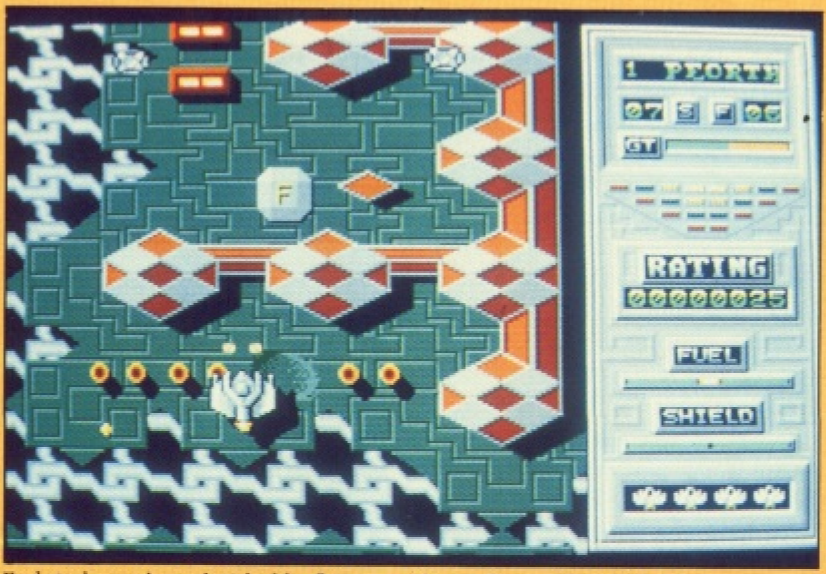
HELLBENT

IN the year 3530 Captain Drak Hellbent carried out a feat of daring and bravery that has yet to be surpassed. Single-handedly he annihilated the Kraellian usurpers of Aldonicha, displaying to all and sundry the absolute supremacy of the Stellarfleet empire. Hellbent, a vertical scrolling shoot-'em-up, is a computer simulation of this historic event.

The Aldonichian landscape is divided into 10 regions and your objective is to destroy enough of the ground forces in each to be allowed to enter the next region.

Ground targets can only be destroyed by laser blasts, which are fired at an altitude of no more than a few feet above the ground. This means that much of your time will be spent flying between buildings – a difficult feat under ideal conditions, a monumental task on the battlefield.

On level one a steady stream of enemy fighters attempts to shoot or ram your ship. Thankfully their efforts can be largely ignored. The main obstacle en route to success is your own heavy handedness.



Fuel stocks can be replenished by flying over the small grey silos labelled F

Your fighter has a phenomenal turn of speed, accelerating from 0 to 60 in milliseconds. Combine this thrust with a twisting path through the built-up regions and you have a recipe for disaster. Your first few sorties will be short ones.

Fuel consumption is the second game-limiting factor. I had scrolled no more than a foot before the Fuel Low indicator began to flash.

Stocks of fuel can be replenished by flying over the small grey silos that have thoughtfully been labelled with a large letter F. Similarly your shields can be recharged by flying over an S. Another feature of these two types of silo is their ability to provide the skilful pilot with bonus points and lives.

As the last target crumbles to dust you are prompted to exit via the north gate and move on to region two. This second zone is far less hospitable than the first – enemy activity has doubled and loss of shields is now a very real threat.

A feature that soon becomes apparent is the fact that you can no longer fly over the ground targets unharmed – you must blast your way through a veritable forest of obstacles. On top of all this the aliens have installed laser fences that activate at regular intervals, preventing your further progress.

Jon Revis

Hellbent
Novagen
£19.95

Sound
Graphics
Gameplay
Value

Overall – 78%

ARKANOID – REVENGE OF DOH

CAN you remember when Breakout was described as knocking bricks out of a wall? Well now they've changed the name and given it a new *raison d'etre*.

Actually, they did this ages ago with a plot the Beano would have rejected. I just can't imagine the bat as a spaceship and the ball as an energy bolt. Even the instructions can't keep up the pretence and resort to calling a spade a spade.

The Doh of the title is a dimension-controlling force which has entered our universe in the spaceship Zarg. Doh was thought to have been destroyed in the original Arkanoid game, but both it and the plot survived.

What the heck, it's still a good game. And so it should be – it was converted from the Taito coin-op by Peter Johnson, an old hand at conversions.

So there you are, batting balls around the screen trying to knock out these bricks. At various stages in the different screens aliens move in to hamper you. When these are hit they go out with the sound of a match striking.

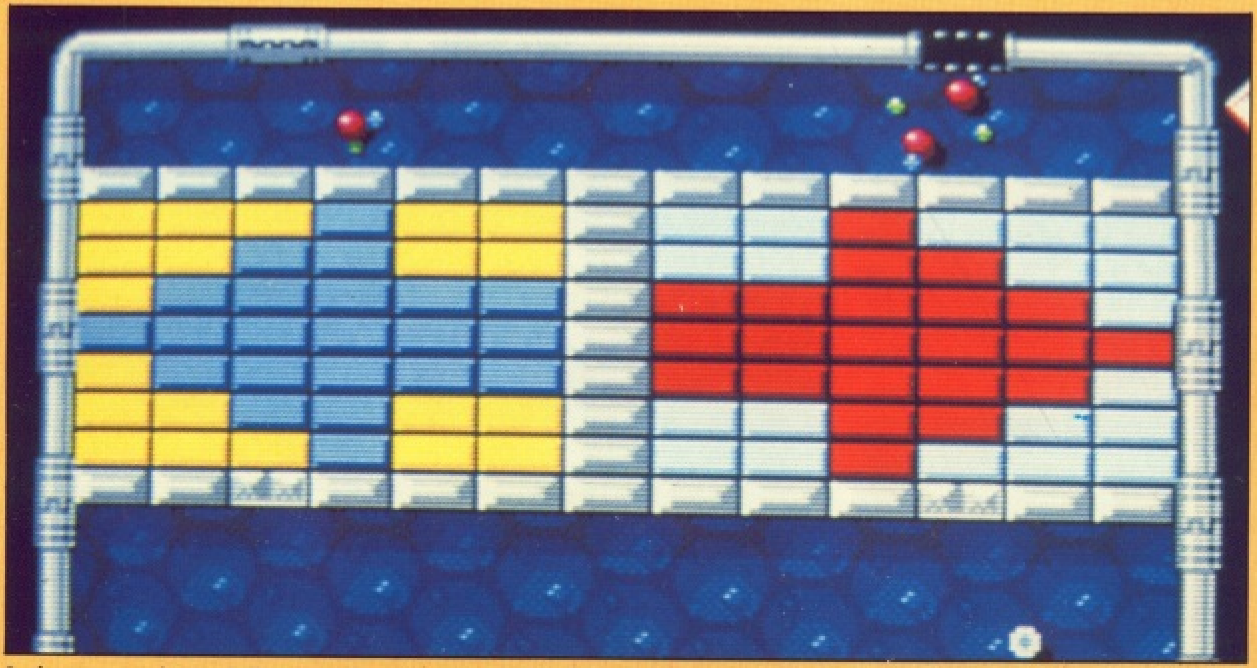
The first few aliens are minor nuisances. Some are large and bounce all over the screen. Really annoying.

When hit, some of the bricks release capsules which have special powers – they may open the side wall, allowing you to move on to the next level, or they may turn your bat into a magnet so the balls stick to it.

Other capsules give you an extra life, slow down the ball, cause a ghost bat to follow you around, effectively increasing your chances of hitting the ball, and produce a twin bat, effectively doubling the size of the bat – but watch out for the gap between them.

I like the laser, you can just blast the bricks away and forget about the ball.

Ian Waugh


So there you are, batting balls around the screen trying to knock out these bricks...

Arkanoid – Revenge Of Doh
£19.95
Imagine

Sound
Graphics
Gameplay
Value

Overall – 72%

SWORD OF SODAN

THIS, the latest game to be marketed by the people who wrote Arkanoid and Revenge of Doh, was programmed in Germany by Soren Grunbech with graphics by Torben Larsen. The package comes with manual and four discs, indicating just how much programming has gone into it.



Hero or heroine, you must learn the five offensive moves that are possible with your sword. To begin with the gameplay is similar to Rastan Saga – you move through a series of parallax scrolling landscapes destroying beasts and devils as they come into view.

If you complete a level a scroll detailing the next mission appears while the next level loads.

To help you avoid hazards like rolling barrels and trapdoors, you can collect extra weapons and potions. The list includes magic zapper, power shield, extra life and increased hit strength. The first two enhancements are essential if you are to achieve real success in the game and venture far into the castle.

The animation is impressive. Each image is at least four inches high and two inches wide. With all the processing power used for animating the characters, I expected the scrolling to be slow and jerky, but to my delight the parallax scrolling is super smooth. A programming marvel, no less.

The sampled speech is atmospheric, it interacts with the game and is more than just an aesthetic delight. When you enter the game a voice shouts, "Halt stranger" alerting the player to the presence of enemy guards. Sampled cries and shrieks of death are all very much a part of making the game more playable.



The graphics are on a par with Cinemaware on a good day. Throw in the odd special effect – the stunning thunder sequence in the graveyard is just one – and you have covered every area of graphical excellence that a game like Sword of Sodan could have.

Chris Holmes

Sword of Sodan
£24.99
Discovery Software

Sound
Graphics
Gameplay
Value

Overall – 82%

TECHNO COP

REAL X-rated stuff – not an attempt to capitalise on Robocop by producing a cheap and nasty copy. For those among us who are guilty of such vindictive thoughts, it's time to eat our words. Techno Cop is a completely different concept.

The first sub game is a car racing shoot 'em up in the Roadblasters mould. Through the windscreen you see the front of your car and enemy vehicles.

The objective is to reach the criminal's hideout in the allotted time. Unfortunately life isn't that easy because drivers in other cars adopt kamikaze driving.

Your car, equipped with an automatic five-speed gear box and standard blaster, can accelerate out of trouble leaving a trail of metallic debris from wasted enemy vehicles.

In fifth gear you can cruise at 223mph. The speed the programmers have achieved with the scrolling and animation is really impressive.

When you reach the criminal's hideout the action changes from a race game into an arcade shoot-'em-up. The car door opens and Techno Cop jumps out.

During a brief delay while the disc drive loads the new backdrops and game action, the dashboard is swapped for a gadget-packed wristband. It is important that you learn what every gadget does. Part of the strap contains a small screen showing a picture of the villain and his physical statistics.

To locate each adversary you must follow the radar. You can either destroy foes using a special purpose gun or catch them with a net. Succeed and you can return to your car where you will be asked to move on to stage two.

After each stage Techno Cop is promoted through the police ranks, and enhancements in speed and firepower are added to his car.

Presentation is of the highest quality. Gameplay touches top levels of excitement and exhilaration. Each sub game would stand up on its own right as an Amiga release. Combined, they represent outstanding value.

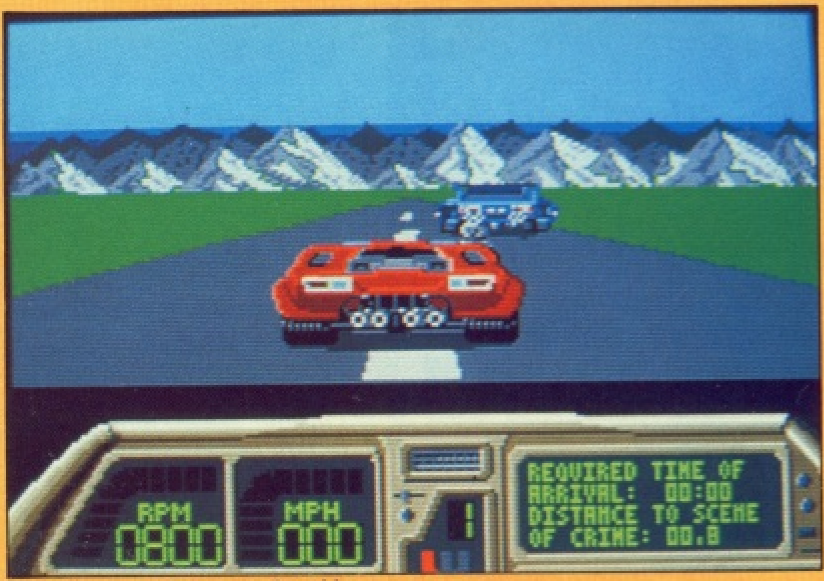
Chris Holmes

Techno Cop
£19.9
Gremlin

Sound
Graphics
Gameplay
Value

Overall – 77%





Your car can accelerate out of trouble

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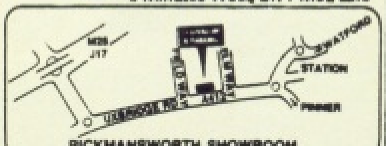
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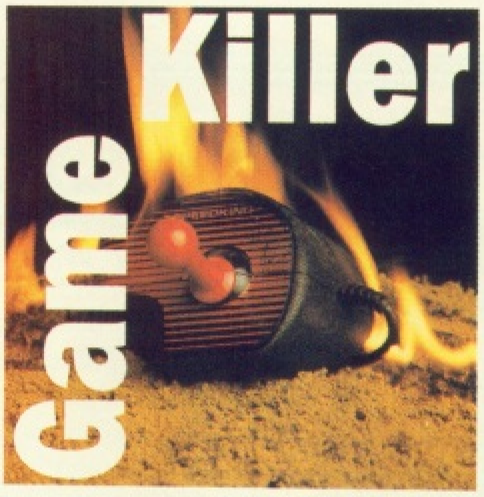


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Underhand hints

Max Tennant has mastered turning his A500 off with his toes – the power supply on the floor keeps his feet warm. And when he's finished ridding the galaxy of aliens it just takes a flick of metatarsal major to shut down the system. But it is not just hardware he has under control, most of his tips are for games

RUN RABBIT, run rabbit, run, run, run. Don't let Judge Doom have his fun, fun, fun ... If that is the tune that has been playing on your mind while you've been playing Activision's Who Framed Roger Rabbit, read on for some helpful hints and playing tips from Adrian Curry.

The most important part of the race against Judge Doom is timing, as the quicker you get there, the more time you will have in the gag factory to rescue Jessica.

To make sure you jump in time to avoid the Dip try keeping your eyes on the far right of the screen for both chemicals and pick up any item which may be hanging from the walls.

Only use Benny's super accordian suspension when you have to – you could accidentally land in a pool of Dip. When you do have to jump try not to come down on another car travelling in the same direction because you may bounce on its roof a few times before being dropped off in a puddle of Dip.

Jumping around also tends to end you up on the tiles, and consequently usually to an abrupt halt. If you are quick enough the rooftop can provide a route which will avoid all the Dip. If you decide to use the roof method it is a good idea to jump down to pick up items, all of which last about 10 seconds.

IN the words of Elvis Costello "Accidents will happen" so when you do suffer a smash, don't panic, Judge Doom won't go anywhere while you are standing still.

If the opposite lane is clear, pull into it and drive off. If there is a road hog there, go forward very slightly, then leap over the obstacle. If you don't move that bit forward before jumping you will get nowhere – except straight up.

After you reach the Ink And Paint Club good timing is needed to grab all the paper you can. For the best results on a table with one drink and three napkins for example, just after you pass the drink press the fire button very quickly three times to grab them all in one go.

This is the only way you will be able to get all the papers and the special message from Jessica before

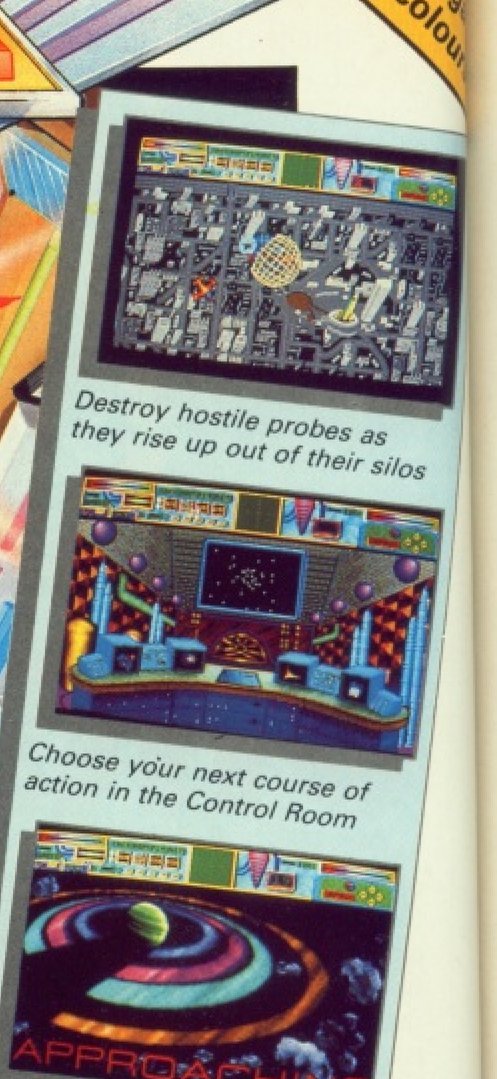


Roger looks worried. Only god can guide him to save Jessica

▶

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the music stops. To get the necessary items from the bottom two tables without being ejected from the club, go to them just after the bouncer has walked past.

If you have too many barrels of Dip and cannot risk getting another, try avoiding the bottom two tables, which are the only two within the bouncer's reach.

After the last race through the streets you will reach your destination, the Gag Factory. How much you beat Judge Doom by in the two races dictates how much time you will have to find Jessica and save her from Judge Doom and his evil Dip contraption.

Almost every section in the factory has a gag lying around on the floor. To find out which ones do what consult your catalogue. Some gags – such as the exploding cigar – are useful for making the weasels laugh. Some like the portable hole are very useful indeed. This can be found on the floor above the entrance to the factory, access to which can be gained by using the lift (you will have to jump into it).

The portable hole is the only way you will be able to get past the large pool of Dip. The vanishing cream can be used to walk safely past the weasles – to make sure you do so before the cream wears off try throwing a pot of stay-put glue in their path, then, while invisible, leap over them and the glue. Quick though. Jessica is depending on you.



Overtake those high scores with Outrun

DERMOT Smurfit is an old hand at beating games, he obviously got Rocket Ranger for Christmas. Here are Dermot's tips.

The most important part of the game is the start; what you do initially influences the whole outcome. You must go straight to the war room, ignoring the Barnstoffs' cries of help, as they will wait.

Once there you must get all your agents together so that you have five in reserve. Now place them in countries surrounding Europe – Algeria, Libya, Egypt, Mideast and Russia. What this does, in effect, is to quarantine the enemy and contain them in Europe, where they start.

When you come back from rescuing the Barnstoffs you will find the agents want to report back as they have infiltrated their countries by then. When you have read the reports get them to organise resistance in the country. If you are lucky this will contain the evil empire.

Then move your agents to West Africa, Nigeria, Sudan, East Africa and Arabia. Carry on this strategy to have a fighting chance. This will reduce the Nazi efficiency which you must try to keep to a minimum. For this reason you should also destroy the zeppelin factories, camps, bomb and airplane factories.

Several times during the game a zepellin will land in Washington DC and capture your good friends the Barnstoffs. Of course you have to go to the rescue. The whole operation becomes easy with practice.

There are three chances for you to get the zepellin gunners or else it is curtains for you. The first is simple, dodge or shoot the oncoming aerial torpedos as they hurtle towards you from the super zep. Don't worry about hitting the zep at this stage it is out of range of your radium pistol.

The next part is more difficult. You are now within range, so a stray shot will send the big balloon sky high. The third attempt is the easiest, as you fly right up the rear end of the ship.

ONCE inside the Zepellin you will be confronted by a very suspicious pair of Barnstoffs. You will have to do some smooth talking to gain their trust. Try these speech selections:

- Loosen up doll face
- I like your style
- I oughtta teach you
- I took the scenic route
- Can you use some help?

Now the professor should step forward and tell you the zeppelin won't fly itself.

You will find the five parts of the rocket you need to fly to the moon in the rocket factory. To begin with fighting is easy and amounts to slugging the guard's groin and face. Unfortunately every time you get one of the rocket pieces the sequence gets tougher, with the guard becoming very difficult to out-punch.

A good method of reducing the chance of the guard getting in multiple hits is to push forward on the joystick as soon as he lands a blow, as very often he will try to give you a hat trick of punches and pushing forward on the joystick reduces the damage he inflicts.

When an agent finds an enemy base it will be located in either the desert or the jungle. Jungle bases involve a bit of target practice but be careful of the machine guns. Desert base attacks

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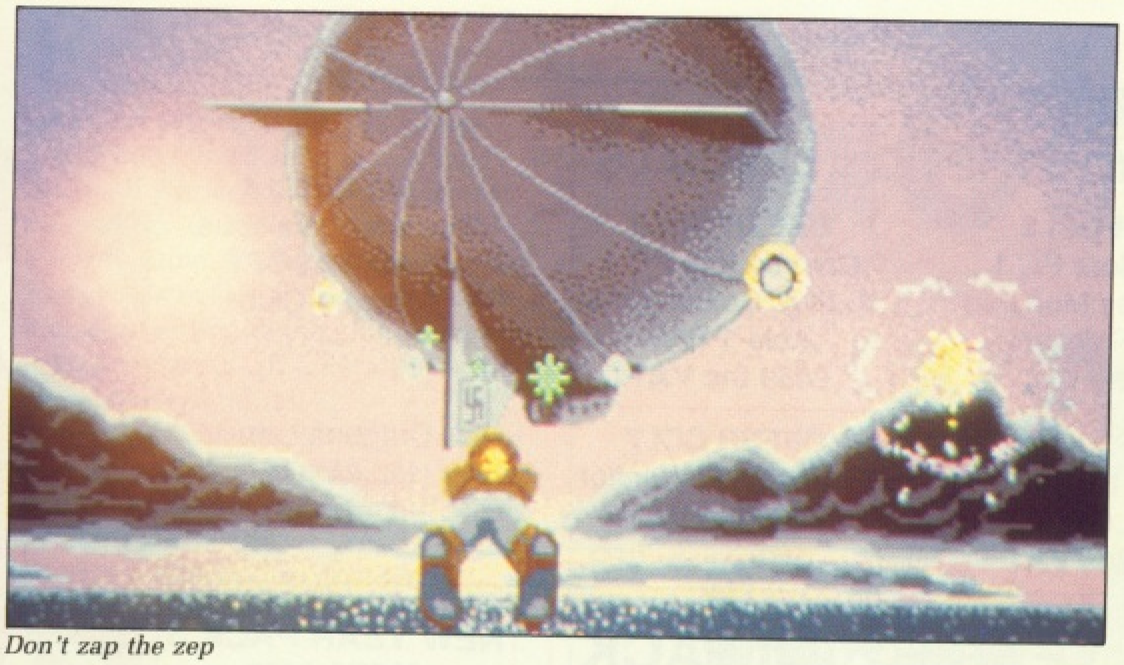
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Don't zap the zep

◄ involve flying over a barrage from anti-aircraft guns. Their shots are not difficult to dodge if you keep to the bottom of the screen. The best method of destroying the guns is to spray a long line of shots along the ground.

Whenever you are flying over Europe from New Jersey it is always a good idea to make a detour to the nearest base to top up on Lunarium.

Perhaps the hardest thing for a rookie ranger is the aircraft dogfight arcade sequence, but it is really not that hard. Just follow these tips:

- Always stay in the middle of the screen to avoid planes appearing from the edge.
- Let the enemy fly into your line of fire, don't chase targets.
- Don't fly for too long or you will overshoot the destination.
- Keep out of the line of fire. Three hits and you are dead.

GO to it, shoot for the moon. Oh, and while we are in space, Darren Rawson's tip for Empire Strikes Back is hold down the help key and type X I F A R G R O T K E V. You will now have infinite shields then press L, C or D for pictures of Luke, C3 PO and Darth Vader.

Darren also offers a tip for Nebulus: Type "Helloiamjmp" on the title screen and then the function keys will warp you to later levels.

To finish off this month we've got a couple of pokes from Justin Garvinovic. First up Out Run. This is the sort of poke that will produce an error when the disc is inserted. As usual this should be ignored.

The next poke is for Elite. Once the routine has been run it will checksum the data and report if there are any errors. If all is well the program will prompt for the hyperspace delay. This is the time it takes to count before you enter hyperspace. The default value is 10, but it makes life easier if this is made smaller to permit faster getaways.

```
REM INFINITE TIME FOR 'OUT RUN'
REM COPYRIGHT 1989. BY JUSTIN G.
REM FOR AMIGA COMPUTING.

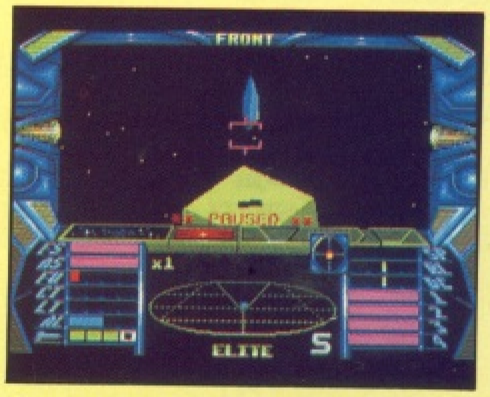
tot=0
FOR n=458752& TO 458904& STEP 2
READ a$
a=VAL("&h"+a$)
tot=tot+a
POKEW n,a:POKEW (n+154),0
NEXT n
IF tot=721044& THEN GOTO section2
PRINT "THERE IS AN ERROR IN THE DATA."
END section2:
cheat=458752&
CALL cheat

DATA 6150,337C,0002,001C,42A9,002C
DATA 237C,0000,0400,0024,237C,0006
DATA 0000,0028,4EAE,FE38,33FC,7FFF
DATA 00DF,F09C,41FA,001C,43F9,0000
DATA 0100,22D8,22D8,22D8,33FC,0100
DATA 0006,0066,4EF9,0006,000C,13FC
DATA 0060,0000,5CA2,4EF8,0400,2C79
DATA 0000,0004,93C9,4EAE,FEDA,45FA
DATA 009C,2480,43FA,0086,4EAE,FE9E
DATA 43FA,002E,4280,4281,41FA,0014
DATA 4EAE,FE44,43FA,001E,45FA,006A
DATA 234A,000E,4E75,7472,6163,6B64
DATA 6973,6B2E,6465,7669,6365
```

AT the end of this routine you can see the various different pokes that can be implemented. If you don't want to have infinite energy, for example, you would simply remove the line after the REM statement. If you don't want to change the hyperspace delay, removing this line will also disable the delay input section.

```
REM MULTI OPTION POKE FOR ELITE
REM COPYRIGHT 1989. BY JUSTIN G.
REM FOR AMIGA COMPUTING.

tot=0
FOR n=458752& TO 459040& STEP 2
READ a$
a=VAL("&h"+a$) tot=tot+a
POKEW n,a
NEXT n
IF tot=835785& THEN GOTO section2
PRINT "THERE IS AN ERROR IN THE DATA."
END
section2:
READ a$
IF a$="Z" THEN GOTO startgame
IF a$="X" THEN GOTO delay
a=VAL("&h"+a$)
POKEW n,a
n=n+2:GOTO section2
startgame:
cheat=458752&
CALL cheat
delay:
INPUT "Enter hyperspace delay ",d
IF d<0 OR d>255 THEN GOTO delay
POKEW n,d:n=n+2
GOTO section2
```




```
DATA 6148,337C,2,1C,42A9,2C,237C,0
DATA 400,24,237C,5,0,28,4EAE,FE38
DATA 33FC,7FFF,DF,F09C,41FA,E2,43F9,0
DATA 100,7063,22D8,51C8,FFFC,23FC
DATA 4EF8,100,5,BA,4EF9,5,C,2C79,0,4
DATA 93C9,4EAE,FEDA,45FA,9C,2480,43FA
DATA 86,4EAE,FE9E,43FA,2E,4280,4281
DATA 41FA,14,4EAE,FE44,43FA,1E,45FA
DATA 6A,234A,E,4E75,7472,6163,6B64
DATA 6973,6B2E,6465,7669,6365,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
DATA 0,0,0,0,0,0,0,0,0,203C,4E71,4E71
DATA 123C,60,13C1,1,621E,33C0,1,4E52

REM ------INFINITE ENERGY------
DATA 13C1,1,1F70,33FC,6008,1,2038

REM -----INFINITE MISSILES-----
DATA 23C0,1,2472

REM -------INFINITE FUEL-------
DATA 23C0,0,8F6C,13C1,0,8FC4

REM -------NO LASER HEAT-------
DATA 23C0,1,2328,33C0,1,2326

REM -------NO CABIN HEAT-------
DATA 23C0,0,4574

REM -----HYPERSPACE DELAY------
DATA 13FC,X,0,8DD5

REM ----LEAVE THE NEXT LINE----
DATA 4EF8,400,Z
```

Getting your back up

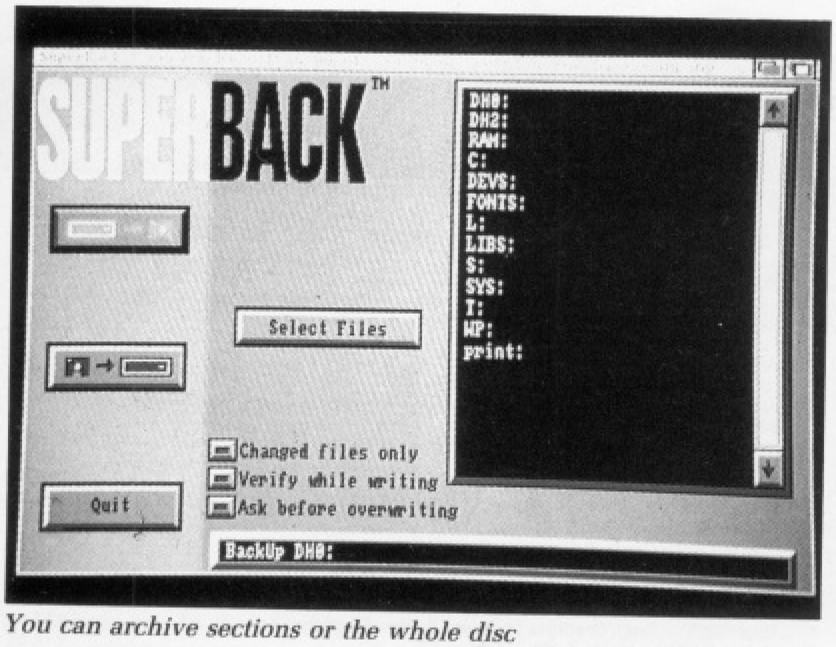
Paul Ockenden tests a program which could be the most valuable utility you ever buy

FOR the last 12 months you've been working on the sequel to your best selling game, Bar Glider Too. You've been slaving away at night, all you can do is think about the strategy of what is undoubtedly the best game not yet released for the Amiga. It's nearly finished. Just take out some of that debugging code, one last compilation, ring for a pizza, sit back smugly and relax.

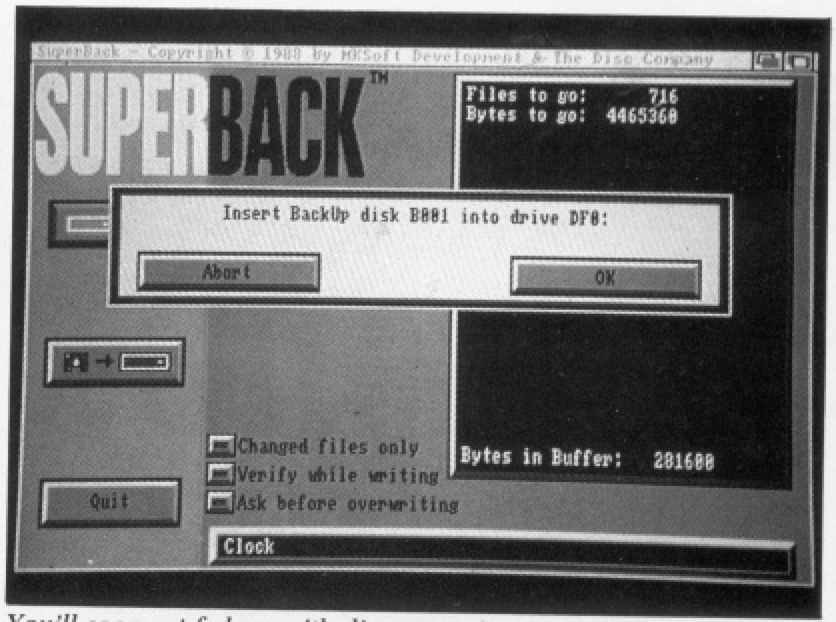
But wait, what's this: *Error reading device DH0:*. You re-boot (that seems to clear most Amiga problems). *Error validating disc DH0:". "Disc structure corrupt". "Please use diskdoctor". DIR DH0: "Device in unit 1 is not a DOS disc".*

Your worst nightmare come true. You search your room frantically for your last set of backup discs. You find them under a pile of red telephone bills – the date scribbled on the label is exactly 12 months ago today.

The computer industry is teeming with stories along these lines. For this reason, most large companies are now insured against loss of earnings due to computer failure, and that includes hard disc crashes.



You can archive sections or the whole disc



You'll soon get fed up with disc swapping

So why didn't Says Jan (the programmer in the above story) take regular backups of his hard disc? Probably because backups tend to take a lot of time. Possibly because backups use a lot of floppies. Maybe because a lot of backup software is not friendly to use.

Perhaps this disaster would not have happened if Says had seen SuperBack, a new hard disc backup program from The Disc Company. Actually, SuperBack isn't just for backing up hard discs, it can be used with any Amiga file structured device, with the sole exception of DF0, so you could use it to backup across a network.

SuperBack writes to a normal Amiga disc in a serial format, block by block. This means that just under a megabyte can be packed on to a disc, as there are no directories or other file system overheads. As the method used is based on the standard Amiga format, backup discs can be copied using the standard DiskCopy command.

This unusual disc format is what gives SuperBack its tremendous speed. The package claims 20Mb in 20 minutes. I wasn't able to achieve this, and I was using a very fast hard disc along with the 2090 controller card. However the timings I obtained were still very impressive. As shown in Table 1.

The user interface shows that the program was designed especially for the Amiga. There is no need to touch the keyboard – everything is mouse controlled. The file requesters are especially good.

Three versions of the program are ▶

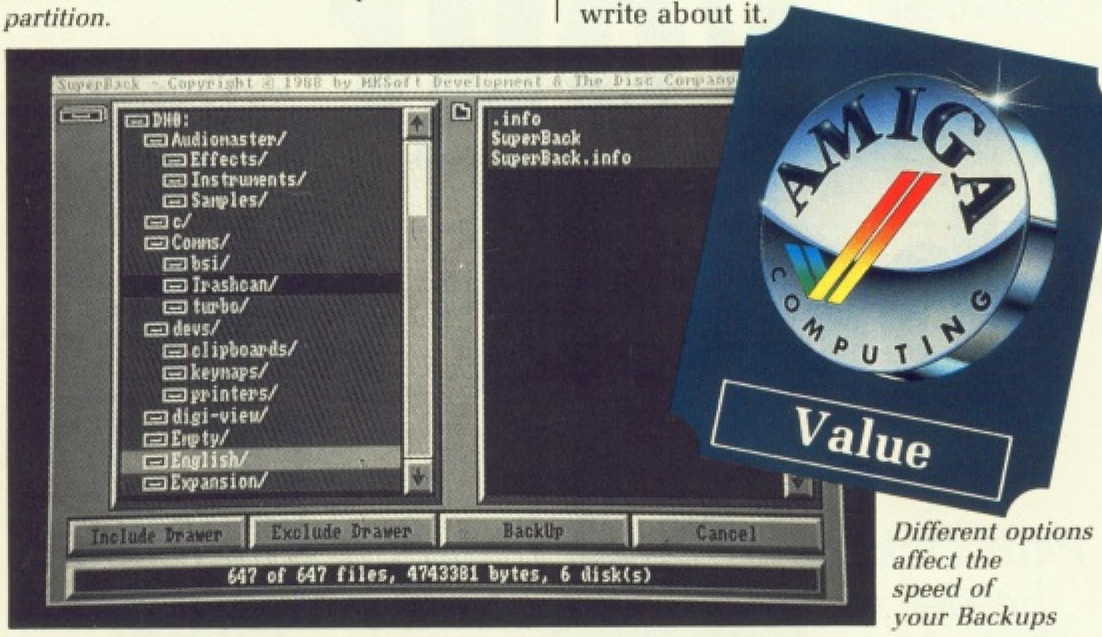
supplied on the non-copy protected disc, giving texts in English, German,

File system/verify after write	Backup Time
Fast File System, verification off	35:00
Old File System, verification off	41:20
Fast File System, verification on	68:40
Old File System, verification on	71:40

Table 1: Time taken to backup a full 30Mb partition.

and French. The manual, printed in these three languages, is well written and informative, although I found I didn't need to refer to it at all during the review.

I found SuperBack to be an efficient and reliable utility, worthy of recommendation to any hard disc owner. It made the whole process of backing up a hard disc seem so simple I had trouble finding things to write about it.



Different options affect the speed of your Backups

REPORT CARD

SuperBack
The Disc Company/Amiga Centre Scotland
£52.95

USEFULNESS ....
A decent backup utility is essential for owners of hard disc systems.

EASE OF USE.........
Can be used straight from the box. Three weeks later you might notice that it came with a manual...

INTUITION............
No need to touch the keyboard unless you want to. Uses very little ram. Multitasks nicely.

SPEED....................
Using a special disc format enables SuperBack to work at lightning speed.

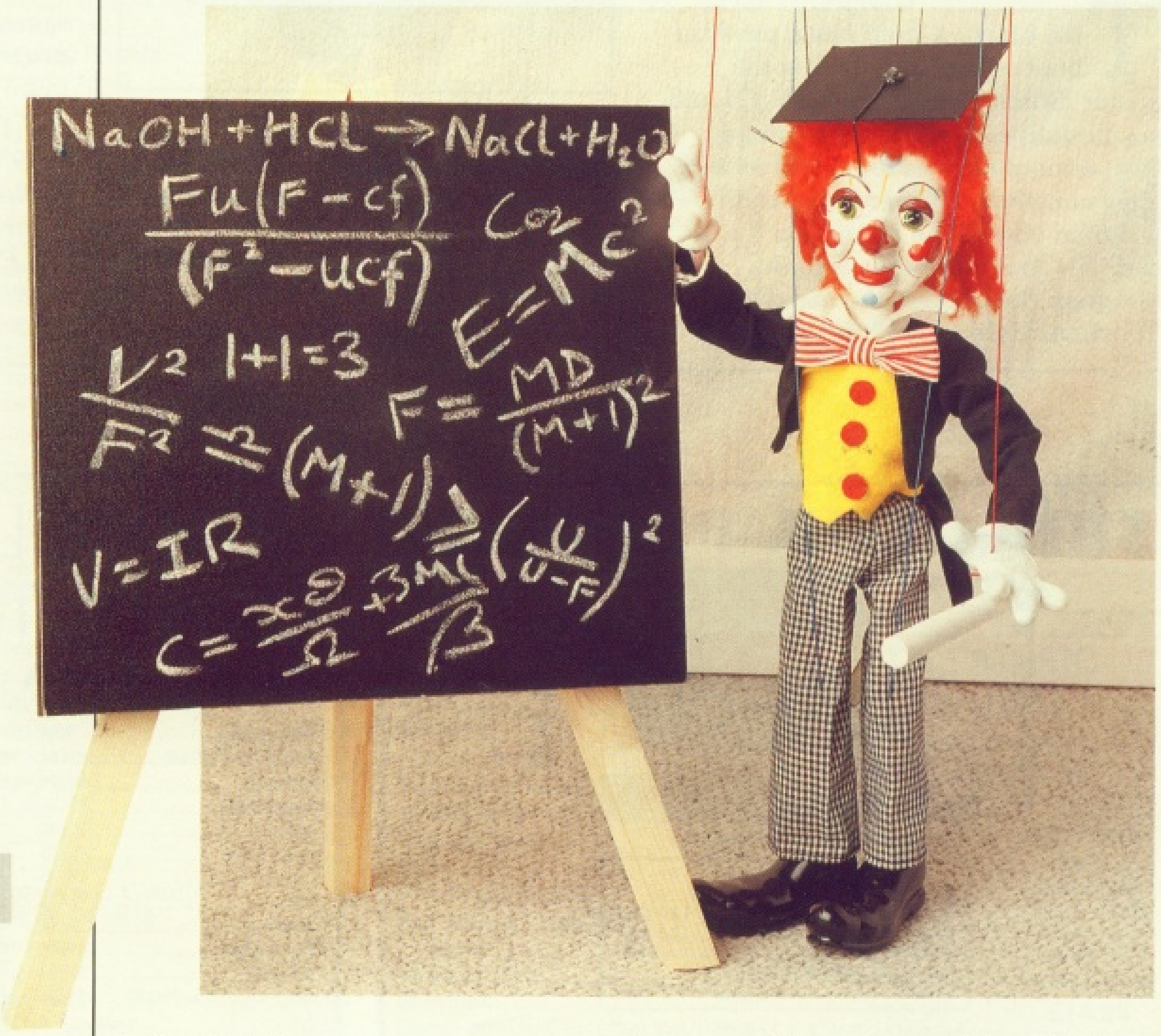
VALUE ....
There are cheaper – even PD – backup programs available, but SuperBack IS good.

OVERALL 91%

SuperBack is a hard disc backup utility which won't get your back up!

Doing it by the numbers

Phil South looks at the DEF FN command and how it can streamline your programming



BASIC isn't just a programming language. As someone once said of C, it's an attitude. The attitude you have to cultivate in order to become a master of it is basic style, and that's what this series is all about. And one of the main points of basic style is the use of subroutines, neatly organised listings and defined functions.

Defined functions are special variables to which you have assigned a formula. Then when that variable is used the formula is executed and a value returned. The DEF FN keyword is responsible for the handling of this datum. For example:

```
DEF FNaddition=1+2+3+4+5
PRINT"The total is";FNaddition
```

Of course this is a fairly trivial example, but it does tidy up your programs to have a series of "tools" at hand to use whenever or wherever you want them.

So why would you use a DEF FN and not a variable, or even a subroutine? The difference is that a DEF FN is smaller than a subroutine and provides a similar service. It is, however, more convenient to employ than a variable or typing the function in every time you want to employ it.

Functions are "filters" through which your data is fed, and a sum or product is generated which is then fed back to the program.

Although you can define a function within a subroutine or main program, you cannot specify it in immediate mode – typed into the AmigaBasic window – or as part of a subprogram.

Don't confuse a subprogram with a subroutine. Subprograms are sets of program statements similar to subroutines, but one of their chief benefits is that their variables are isolated from the main program. There is no way you can define functions in them.

The other benefits of subprograms are that they can't be accidentally executed in programs with no END, and they are portable between programs. Incidentally, when you CHAIN into another program, you don't retain the same values for any DEF FN staements either.

There is an extended version of the DEF FN command, the format:

```
DEF FN <name> [(parameter list)] = <function>
```

Notice the square brackets, indicating the optional nature of the argument. The parameter list contains the

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variable names in the function that are to be replaced when the program invokes the function.

The parameter list is always contained in parentheses, and each name in the list separated by a comma:

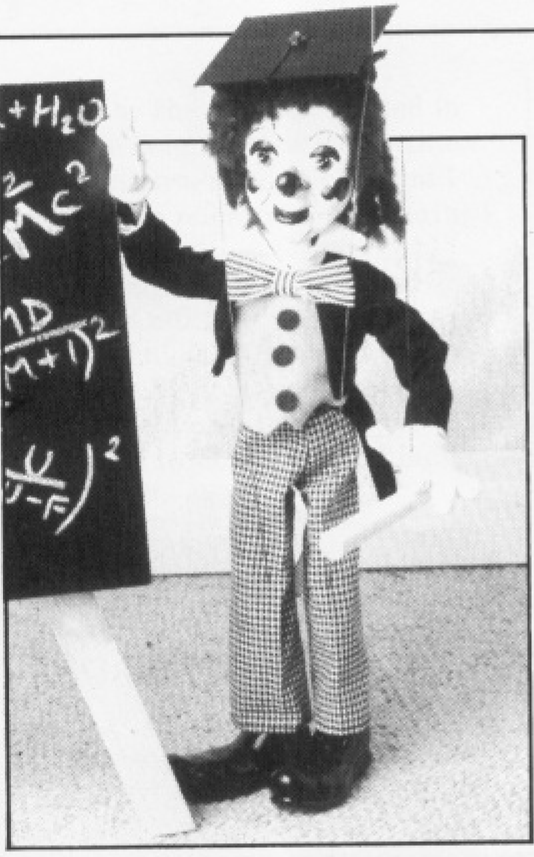
```
DEF FNgarbage(a,b,c) = a2+b2+c2
```

Variables in your program which have the same name as the names in the parameter list are not affected by the list.

THE function itself has a physical limit of one line. This is the major difference between DEF FN and a subroutine. A subroutine can be any amount of lines long, and indeed may constitute a program in itself.

When you define a function the DEF FN line must appear in the program flow before the use of the function. Unlike certain other functions which are globally understood by programs, you must ensure that the program looks at the DEF FN before it comes to a use of it, causing a *Undefined user function* error.

This doesn't mean that the definition has to be above the use in the program, just as long as the program GOSUBs or GOTOs the DEF before it is required to be used.



DEF FN can define either numeric or string functions. Obviously the function part will always return a sum or product of the same type as the type specified in the DEF FN. AmigaBasic issues a *Type mismatch* message if the data specified the line which calls the function doesn't match that of the DEF FN.

Finally, if you should DEF FN the same name twice by accident, the program will take the last definition to be the correct form. Just thought that might help debug your program if you've got you DEF FNs in a twist!

● *Next month we'll be looking at error trapping in AmigaBasic, with the ERL, ERR, ERROR and ON ERROR...GOTO statements. See you then.*

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AMIGA Letters

Girls in computing

I AM fed up with the way women are treated in computing. I've got a BSc in computer science and know what I am talking about. However when I go into a computer shop to ask about Amigas the salesmen all talk down to me. I am told how I could use Superbase Personal to keep recipes and how educational it could be.

I know these things. What I want is advice on what compilers are available, what the operating system is like and how to really get the most from an Amiga.

In the end I bought a machine from a cut price mail order company. I would have paid the full price, but only if the company offered decent back-up.

Tanya Al-Rais,
Gravesend. Kent

Women are not singled out for bad treatment in the Amiga world – there are many senior women in Commodore development. Gail Wellington and Caroline Scheppner are two who spring to mind.

The curse of the ignorant salesman is one we have to live with. Anyone who is keen and learns about the computers in the shop seems to get promoted. A good shop to deal with is The Amiga Centre Scotland, on 031-557 4242.

Starglider shield

DO I detect slight radiations from the planet Argonaut in reply to Omar Farooq's query (Starglider slug January 1989) as to why Starglider II runs slightly slower on the Amiga than the ST?

If you treat the Amiga like an ST it will run slightly slower. It is more sensible to treat it like an Amiga. The whole point about the blitter is that it will co-process with the 68000 if the code is properly written. Used in this way it is very much faster than native 68000 code at screen operations.

Writing portable code to make life easier when you move programs from one machine to another makes commercial sense, but does not have a profound effect on the hardware.

To put it another way: My neighbour's push-bike is a hell of a lot faster than my XR3, so long as I don't turn the engine on!

Jim Hawkins,
London N16.

Well you know what they say about XR3 drivers. Yes, we have been "got at" by Argonaut. We complained about the ST version being slower and their explanation (excuse) sounded very reasonable.

The Amiga runs 10 per cent slower than the ST. For most purposes the custom hardware more than counteracts this. Sound will not slow an Amiga program, nor will colour cycling. But the blitter is only fast when it comes to filling large areas.

"Ah", we pretend to hear you say, "but Starglider has lots of big areas to be filled". We couldn't agree more, but according to Jez San and the team at Millway, Starglider doesn't plot big areas, it draws the difference between the shapes.

Setting the blitter up to draw such small areas, which may just be a couple of pixels, takes longer than using the 68000 to plonk the bytes straight on the screen.

The latest news from Argonaut is that the game is starting to have an effect on real life. The car which provided the inspiration for Professor Taymar's transport caught fire and Al's chair – the original pilot's seat – has collapsed.

String up virus writers

LIFE is hard enough for an Amiga owner. IBM owners laugh at the prices we pay for hard discs. Atari owners ridicule AmigaDos and my cousin with a Spectrum calls me a computer snob. Since I suffered a bad attack of Byte Bandit I feel like a Lamborghini owner who has just been caught at 105 mph on the M1.

Amiga viruses are the most contagious going, thanks to the Amiga's wonderful operating system; while I haven't lost any discs, the sight of a blank screen makes my heart skip.

I can't see why people write viruses, they are not funny, annoy a lot of people and worst of all taint the Amiga's image.

It should be illegal to write programs which are so dangerous. If I was caught littering park benches with poison sweeties I'd go to prison. People who write programs designed to corrupt discs should suffer a similar fate.

Ben Alison,
Surrey.

Write to: The Editor, Amiga Computing, 78-84 Ongar Road, Brentwood. Essex, CM15 9BG. We'll send the writer of the best letter each month a program from our goodie drawer.

What is a virus?

WHEN I was at school I was scared to put my hand up to ask questions in case I looked stupid. Now I regret not really understanding elasticity of demand. So here is my hand, or rather your hand holding my letter. Last month I bought an Amiga and am very pleased with it. My question concerns viruses. If I used an infected disc what exactly happens to my Amiga? If the virus installs itself in the Amiga is it lost when I turn off the power? Can a virus damage the computer or the software?

Craig Thornton,
Nettleham, Lincon.

Elasticity of demand governs the effect a price rise will have on sales of a given product. Demand for basic essentials doesn't change much, so it is called inelastic.

If milk was free we wouldn't all start drinking gallons of the stuff, similarly if it went up to 50p a pint we would have a few less bowls of cereal but we wouldn't stop drinking tea. Demand for luxury goods is more elastic, which is why budget software outsells full-price games.

Viruses sit inside an Amiga and corrupt discs. When you put the first

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disc into the Amiga after switching on, the computer loads a bit of software from an area on the disc called the boot block. The computer then goes on to load the main program, workbench or CLI.

A virus takes over the boot block, so when an infected disc is used to power up the system the virus program is run before the main program. Whenever you put in another disc the virus transfers itself to the boot block of the new disc. And so the virus spreads.

When you turn off the power the virus is destroyed, but it can survive a Ctrl-Amiga-Amiga. If your start-up disc contains a virus all the discs you use will probably have it too.

You can erase a virus by typing INSTALL DF0: from the CLI with the infected disc in drive 0. But it is better to get hold of a virus checker. See last month's news about VirusX 3.1

A virus cannot damage the computer, it might appear to do so, depending on which virus it is. If the screen goes blank you probably have an attack of Byte Bandit. It can damage some software, usually games which have disc protection in the boot block.

Piracy is not a crime

MOST decent games cost over 20 quid. My friends and I get about half that every week in pocket money. The only way we can afford to buy games is by clubbing together.

But I'm not going to fork out a fiver when my mate Rob gets to take the game home and I don't get to play it. So we copy it. If we didn't we wouldn't buy the games. I don't see why this should be illegal.

(Name and address withheld)

Just because you cannot afford something is no excuse for stealing it. Someone once said that if you could photocopy cars we'd all have Rolls Royces. We don't believe that you wouldn't buy games, just that you would buy fewer of them.

And if you are pirating the programs you buy we'll wager you pirate programs that other friends buy, or "get hold of".

The people who suffer are the programmers. This is best summed up by a message inside Dragons Lair which reads:

"A message to crackers: Nobody wants copy protection. All it is designed to do is give a program a fighting chance. Now we realise that there is great competition to see which group breaks this game first, however if you do break it please consider this: If you let this game out early after release, and there are few sales, it will be very difficult to justify followup games of this type. Nobody benefits; not the developer, not the user and not the Amiga community. The decision is yours".

Please heed these words. Pirate games and software houses will stop writing for the Amiga. They will go over to the PC where potential sales are better and piracy is less of a problem. The health of the Amiga market lies in your hands.

Unwanted Basic

WHY oh, why, oh (spells Yo-Yo), why, does Commodore include AmigaBasic with the machine. I mean it's a pretty poor version of a language we should have forgotten when our Commodore 64 was introduced to the cupboard under the stairs.

The right language to use on a machine which has a proper operating system – and Amigados is the best thing this side of Unix – is C. Failing that Modula-2, or Pascal. Anything but Basic.

All programs written in AmigaBasic end up as kludges. There is none of the elegance of C and it is wrong to teach the programmers of tomorrow the bad habits of yesterday.

I think Commodore should have put a C on the discs. Microsoft may have a long established tradition of writing Basics, but then they have a long established tradition for everything they write because all Microsoft programs are way overdue.

So Commodore, next time you decide on what should be bundled with an Amiga think C. You know it makes Cents.

Ian Rook,
Scunthorpe.

Crash course

I AM leaving school this coming July and am very interested in becoming an Amiga computer programmer. Could you answer these simple questions?

Can I draw an IFF format picture on, say, DeLuxe Paint and merge it with an AmigaBasic program? I've tried many different ways and failed. Is there a special routine, or even a listing? And is there a routine I can merge with an AmigaBasic program which will let me sample sound effects to put into a game of my own design?

Finally, can you give me some information on how I go about becoming a computer programmer?

Neil Mansell,
Canvey Island.

Let's deal with your last question first. To gain even slight success as an Amiga programmer you are going to have to learn either 68000 machine code – the Motorola 68000 being the microprocessor inside your Amiga – or the C programming language. Basic, even AmigaBasic, isn't fast enough.

As far as machine code is concerned, start following Rupert Goodwins' tutorial, which began in last month's issue. When an affordable C language comes out we'll run a tutor series on that, too.

If you want to learn more about C right now, the book to buy is a Prentice-Hall publication (ISBN 0131103628) called C Programming Language 2nd Edition by Brian Kernighan.

IFF files can be read in from a Basic program, although it's a fairly slow and complicated procedure. The best examples we have seen can be found in a book called Amiga Basic – Inside and Out (Abacus, ISBN 0916439879) by Rugheimer and Spanik, although if you can put it on hold for a few months the subject is going to form the basis of a future article in this magazine.

Both the above books can be bought mail order from The Computer Store on 021-770 0468. Ah yes, and if you want to be a programmer you've got to learn how to juggle.

Spray it again, ma'am

LAST month you advised Arthur Wyatt not to use stamp pad ink to re-ink his printer ribbons, but to contact Aladdink who, you said, would re- ink Mr Wyatt's ribbon with the proper, specially formulated, stuff. But I have found a better and cheaper way to make my printer ribbons last longer. It comes in a spray can and is called Refresh.

It also is specially formulated for fabric printer ribbons. I got my can for £7.95 mail order – and very promptly too – from a company called Wacci (01-898 1090). Works a treat, and re-inks up to 30 ribbons, depending on how generous you are with it.

Sue Denham,
Cork, Eire.

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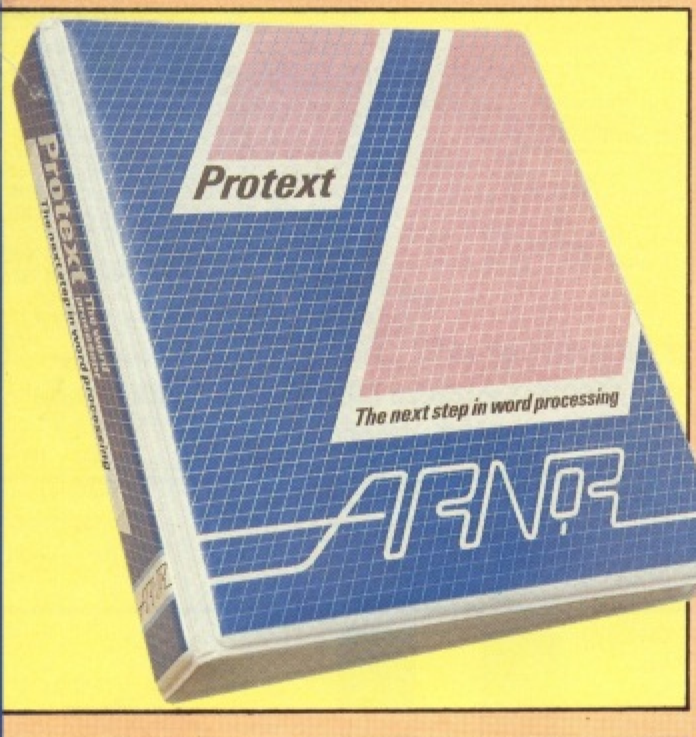
Protext is acknowledged by many as THE word processor for most home micros, and the Amiga version is no exception.

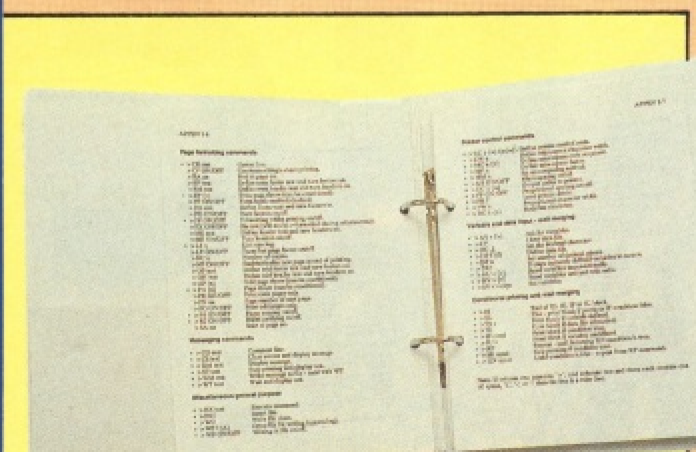
With over 4 years of development by one of Britain's top software houses, Protext has evolved as more powerful micros came along – each version being extensively tailored to fit in its new environment.

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Press comments

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"It is a refreshing change to review an inexpensive WP package which lives up to every expectation". – **Which PC**

"Protext deserves to be the system by which all other word processors are judged... Arnor have given the market a superb product". – **Your Computer**

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'...merely the best word processor for the Amiga'

– Reviewed in Amiga Computing January 1989

TO ORDER YOUR COPY, TURN TO THE FORM ON PAGE 97

Plain man's guide to CLI

This month Phil South looks at the WAIT and DATE features of AmigaDos and asks "Good heavens, is that the time?"

YOU know it's a funny thing but some of the Amiga's best features are hidden in AmigaDos. As a result most are not used by the average owner. DATE is a perfect example. Sure, you can set the date from preferences so all your files are datestamped with the right date and time, but that's only the half of it.

In the CLI, to set the date you type: DATE <DD-MMM-YY> where the date is in the European format day-month-year. The first three letters of the month are sufficient to tell the computer what month we're talking about. The year is just the last two digits – the computer assumes you know which century you're living in.

To tell the time just type: DATE <HH:MM:SS> where the time is in hours, minutes and seconds, all separated by a colon. You can tell the whole story in one line, like so: DATE 06-MAR-89 10:20 which is a bit easier. Now every time you type DATE, have DATE as part of batch file, or in a startup sequence the currently set date and time will be printed on screen.

If you have an internal clock or memory expansion, you set the time in the internal clock by using DATE first, to set the time, then using: SETCLOCK OPT SAVE to dump the current settings to the clock. Then in your startup sequence you must insert SETCLOCK OPT LOAD which pulls the data from the battery backed clock into the AmigaDos system.

Interestingly, AmigaDos understands the terms tomorrow, today and yesterday. You can also refer to days of the immediate week to set the date. Like: DATE Wednesday or even: DATE 05:30 Friday which advances the date to the day specified and to a new time if one is given. The input is quite flexible.

One interesting by-product of the DATE system is discovering days to dates. For example: DATE 25-DEC-00 sets the date to the birth of Christ, provided you accept that the festival is accurately placed and not in June/July as some suggest. Then typing DATE informs you that the day on that date was a Monday. Instant recall of any day within the century. Well, that should keep you amused for a while. It did me.

If you use your Amiga frequently the DATE Friday approach should be all you need to keep.

Having mentioned DATE, there's another vaguely time-based command which could bear inspection. WAIT is a useful timewaster in a batchfile, for sure, but it has other uses. Like the pause commands in other languages, it is a handy timer for certain short term events. You will want a WAIT 30 in your start-up sequence if you have a Bridgeboard. This is because it takes a while for the PC card to intialise.

But what about longer term events? How about using it to put a timelock on your Workbench disc? The syntax for the WAIT command is: WAIT <n> [SECS][MINS][UNTIL <time>].

You can time a program event to seconds instead of the standard clicks. But you can also hold a program event UNTIL a certain time of day, like WAIT UNTIL 21:15 or WAIT 10 MINS and so forth.

So how about putting a WAIT into your startup sequence? How about: WAIT UNTIL 09:00 for instance, would wait until you got into work before allowing your computer to be started.

Of course you would be able to override it if you wanted to get in at another time, but the puzzle would probably be too much for the average non-Amiga user. Another use for the WAIT command is as a kind of alarm clock.

Why not set a WAIT command to sit in the background of all your tasks, until a certain time of day, when it goes to a SAY command, which talks to you and reminds you of the appointment in question? The batchfiles in question in these two examples could be RUN as separate CLIs in the multitasking environment, thereby running them in the background of any task.



Tune in next time for some more thrilling forays into the AmigaDos jungle. If you have any queries resulting from this article, or your own programming hints or problems, drop me line at Plain Man's Guide, Amiga Computing, 78-84 Ongar Road, Brentwood, Essex CM15 9BG. Please remember I can only answer questions through the pages of the magazine, and not by correspondence.

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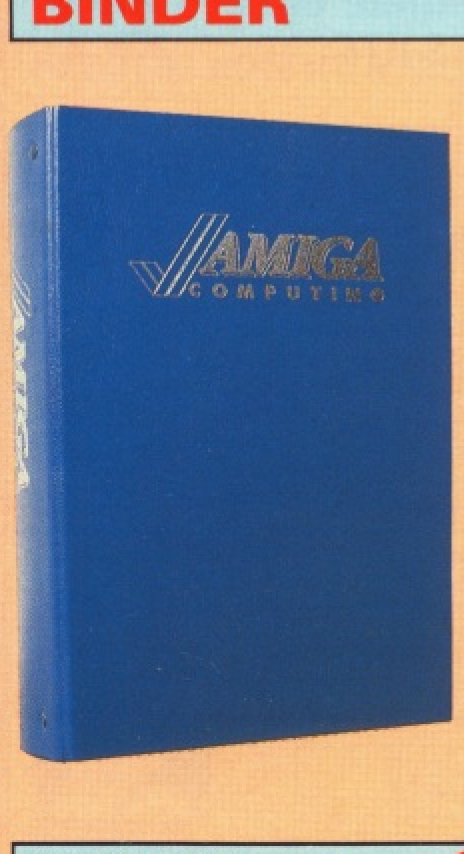


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